Economics 1470: Bargaining Theory and Applications
Spring 2021
Professor: Jack Fanning (jack_fanning@brown.edu)
Classes: Tues, Thurs, 2.30-3.50 pm at Alumnae Hall 212
Office Hours: Mon 3-4pm, Friday 4-5pm (or by appointment)

TA: Ricardo Fonseca
TA Sections: TBA
TA Office Hours: TBA

Course website: Canvas
Weekly questions due: Tuesday 12pm via Ed Discussion
Homeworks and Peer reviews due: Sunday 11.59pm via Canvas

Description of the course:

Bargaining involves two or more people trying to reach an agreement to create economic value and divide that value between then. Will they reach agreement? How much value will be created? How will it be divided? What determines these outcomes? This course will address these questions from a number of perspectives, but with a strong focus on game theory. The course assumes some prior knowledge of game theory (coming from having taken a previous course) but will aim to deepen your understanding of that theory. To develop a deeper understanding of the theory and to understand how it matches up to practice, you will frequently interact with other students online through class experiments (games) and also through case studies.

Course goals

If you complete this course you should be able to:

- Identify key strategic elements of bargaining interactions, such as people's incentives, their available options, the duration of their interaction, and what information they have or can acquire.

- Design appropriate "games" to model the effects of these key strategic elements

- Apply a variety of solutions concepts to predict the outcomes of games, and to understand both the value and potential errors in such predictions

- Identify and argue for bargaining outcomes that are supported by reasonable general principles

- Use insights from the course in your own negotiations

Prerequisites

Intermediate Microeconomics (Econ 1110 or 1130), and a previous game theory course (Econ 1090 or 1870). A good math background might also help with some elements of the course.

Course structure

This course will be taught in a flipped classroom structure, with 11 modules (2 of which are case studies). Each module will correspond to a week of the course. You will:

- Participate in online bargaining experiments each week before class

- Watch online videos each week before class, which explain different aspects of bargaining theory

- Occasionally complete short readings

- Take notes on the videos and readings and formulate questions about areas that seem unclear

- Submit questions about the week's material before class via Ed Discussion and attempt to answer others' questions

- Attend class with an active mind, ready to discuss the week's material and apply it to homework style problems.

- Complete weekly homework and peer review the previous week's homework.

- Take part in two bargaining case studies

- Attend TA sections as necessary, primarily dedicated to reviewing the previous week's homework material.

- Attend office hours as necessary with additional questions.

- Take one midterm and one final

If you are unable to attend class in person for some reason, you will be able to subsequently review a recording online.

Health and Safety

You must follow Brown's current public health practices, including mask-wearing for indoor lectures. I ask that you refrain from eating or drinking during class. I will try to be as understanding as possible of any health enforced absences. I look forward to working with you together this term to keep our community safe and healthy.

Breakdown of course grade

The final grade will depend on class experiments (5%), other class participation (5%), weekly homework (10%), grading homework of peers (10%), participation in two case studies (10+10=20%), one midterm (15%), and a final exam (35%). Scores in each part will be added up in a simple fashion. The passing grade for the class is 50%. I expect the top 50% of students who pass to get an A. If you are taking the class S/NC and get an A, I will give you S with distinction.

Experiments

The first thing you will typically have to do in each module is to take part in an "experiment". Your choices in these experiments will be submitted online through Canvas. Sometimes you will have to complete the experiment before gaining access to the week's other activities, and sometimes you may need to contact other students in the class (e.g. via email) before making your choices.

The experiments involve you making a decision in games (strategic settings), where you will be randomly paired with another student from the class. Your payoff in experimental points will be affected by

what you do and what other students do. Five experimental points will also be awarded for simply for participating in a game. One or more randomly selected experimentd will count to your grade, however, you will not know which ones in advance, so should act as if each game is one that will count. Your final grade score for experiments will be as a percentage of maximum available point total. The fact that your score depends on the other person's actions introduces an element of chance into your grade. Unfortunately, that's inherent to strategic decision making, which is a principal focus of this class.

Online videos, reading

Videos and readings will be posted on Canvas (sometimes available only after participating in the module's experiment). You should watch all assigned online videos and complete any weekly reading, taking notes as you go *before* the classes associated with the module. The total run time of each module's videos is approximately 2 hours, but you should allocate more than this time to take notes etc. Please review material on Canvas, with advice on how to take effective notes. You must carve out sufficient time in your week to complete this (suggested time: over the weekend, and/or Monday).

Ed Discussion and other class participation

You must submit at least one question about the week's material (i.e. videos and reading) on the relevant Ed Discussion discussion board by 12pm on Tuesday (our class time is at Tuesday 2.30pm), which will count toward your participation grade. You can ask more than one question. Your question can also reiterate or build on the question of another student. If you really think you understand everything and so have no questions, you can write 50-100 words about the thing you found most interesting in the readings/videos, and why. You should try to respond helpfully to other students questions and other questions to receive additional participation credit.

You can receive up to 4 participation points each week. You will receive 2 points for submitting a question on the weekly assigned material on the correct discussion board on Ed Discussion by Tuesday at 12pm. You can obtain up to 2 further points each week by helpfully responding to another students' question on Ed Discussion (e.g. either submitted for Tuesday's class discussion, or about homework), or by actively participating in class (e.g. answering questions). Such class points will be awarded by either me or the TA without appeal. N.B. Do not simply post your own answers to the homework online - that will receive 0 points (and incur my wrath).

Before your first posting, please read through and internalize the ground rules posted online for using online discussion boards. Find our class Ed Discussion page on canvas.

Class Time

Our class time (Tues, Thurs 2.30-3.50pm) will be spent discussing/answering questions submitted online or newly asked in class, discussing behavior in the class experiments, and working through specific homework style problems that help illustrate the key concepts in the week's topic. You can receive up to 1 point per class towards your participation grade by being adjudged to have actively engaged in class time by asking insightful questions or answering my questions.

Homework

The homework will be primarily problem based (not essay based) and will test your understanding of the material. Homework must be submitted by 11.59pm on Sunday via Canvas (with slight exceptions for the long weekend and spring break). Late solutions will not be accepted, however, your lowest grade of

the semester will be dropped. You may collaborate with other students on the homework (and ask/answer questions about it on Ed Discussion), but must submit answers separately. Some of the problems may be hard. They require thought, rather than simply reproducing class notes. This should help deepen your understanding of the material, but do not worry excessively if you cannot always solve them! If you engage purposefully with a problem but are unable to fully understand it until seeing the solutions/TA section, I will be happy. The TA section will go over the solutions to the homework, and solutions will be posted online. Homework is graded out of 10 points according to this rubric:

- 10 - the student has mastered the key concepts/material addressed (she may certainly, nonetheless have got some questions wrong, e.g through calculation errors/small misunderstandings). Excellent.

- 7 - the student has understood most of the key concepts/material addressed but also demonstrates gaps in her understanding. Satisfactory but room for improvement.

- 4 - the student has demonstrated a very limited understanding of the key concepts/material addressed. Need for significant improvement.

- 0 - the student has not demonstrated no effort to properly answer the questions or has not handed the homework in.

Scores can of course fall between these guidelines (e.g. a score of 8).

Peer review homework grading

I will ask you to anonymously grade one other student's homework each week, with the help of homework solutions (as well as TA sections and office hours if necessary). You must complete this grading by Sunday 11.59pm, the week after the homework was originally due. You goal is not simply to correctly award points, but to identify specific mistakes, and explain to the student where they have gone wrong. The purpose of this exercise is help you to understand the material better, and more closely review where you yourself might have gone wrong. Your grading will then be assessed by the class TA (who can adjust the score you assigned) according to the following rubric:

- 10 - the peer reviewer has correctly graded the homework in line with the solutions and, where necessary, has clearly identified and explained any points of misunderstanding in the homework. Excellent.

- 7 - the peer reviewer has made no important mistakes in grading the homework in line with the solutions and, where necessary, has attempted to identify and explain any points of misunderstanding in the homework, but not always entirely clearly. Satisfactory, but room for improvement.

- 4 - the peer reviewer has made important mistakes grading the homework, or has not attempted to identify and explain points of misunderstanding in the homework. Room for improvement.

- 0 - the peer reviewer has not graded the homework.

Exams
There will be one midterm (15% of course grade) in class on March 17, and a final exam (35% of course grade) on May 12. The exams will also be problem based. You are obviously not allowed to collaborate with others on the exam (see below). I may increase all students exam scores by a constant if the exam is too difficult to satisfy the 50% cutoff for a *C*. The aim of the final grade cutoffs is to match the following rubric:

- A - the student has mastered nearly all of the key concepts/material.

- B - the student has understood most of the key concepts/material addressed, but also demonstrates clear gaps in her understanding.

- C - the student has demonstrated a limited understanding of the key concepts/material, major gaps in her understanding.

- NC - the student has almost no understanding of the key concepts/material

Cheating

In taking this class, you must agree to follow Brown's Academic Code:

$http : \backslash\backslash www.brown.edu\backslash academics\backslash college\backslash degree\backslash sites\backslash brown.edu.academics.college.degree\backslash files\backslash uploads\backslash Academic - Code.pdf$

Cheating on exams will be severely sanctioned.

Accommodations

Brown University is committed to full inclusion of all students. Please inform me early in the term if you may require accommodations or modification of any of course procedures. You may speak with me after class, during office hours, or by appointment. If you need accommodations around online learning or in classroom accommodations, please be sure to reach out to Student Accessibility Services (SAS) for their assistance (seas@brown.edu, 401-863-9588). Students in need of short-term academic advice or support can contact one of the academic deans in the College.

Books and other supplies

There is no course book! The online videos and lecture notes are "the book". I will also post some required readings and some optional readings online each week.

Recommended to those without a strong game theory background: *Strategy: An Introduction to Game Theory* by Joel Watson (3rd edition). I have not required this book on the understanding that you already have a good game theory book resource from a previous course. This particular book covers much of the game theory material in the course, but the course will also go beyond it. It is available in the bookstore and two copies are on reserve at the Rockefeller library. Earlier editions of this book can be purchased more cheaply on the internet, covering much of the same material. You can currently get a 2nd edition from Abebooks.com for under $10.

Optional: *An Introduction to Game Theory* by Martin Osborne (covering both Game Theory and the axiomatic approach at a similar level to this course), *A course in Game Theory* by Osbourne and Rubinstein (a graduate level text available for free online on Ariel Rubinstein's website), *Bargaining Theory with Applications* by Abhinay Muthoo (a graduate level text specific to bargaining). On a more practical side, you might also enjoy *Getting to YES* by Roger Fisher, William Ury, and Bruce Patton.

If your Brown undergraduate financial aid package includes the Book/Course Material Support Pilot Program (BCMS), concerns or questions about the cost of books and course materials for this or any other Brown course (including RISD courses via cross-registration) can be addressed to bcms@brown.edu. For all other concerns related to non-tuition course-related expenses, whether or not your Brown undergraduate financial aid package includes BCMS, please visit the Academic Emergency Fund in E-GAP (within the umbrella of "E-Gap Funds" in UFunds) to determine options for financing these costs, while ensuring your privacy.

Approximate timings

You should expect to spend approximately 14 hours a week on this class. This time can be broken down as follows:

- Class time, including TA section (3.5 hours per week)

- Reading course materials and viewing course videos (5 hours per week)

- Completing class experiments, completing homework, grading homework, studying for midterm exams (5.5 hours per week)

Module topics

1. Coordination and principles: Rationalizability and Nash equilibrium

2. Reasons and the Nash bargaining solution

3. Ultimatums. Bargaining power, preferences for fairness.

4. Alternating offer bargaining. The costs of delay. Nash bargaining revisited.

5. First case study: Zinc-it

6. Competition and outside options

7. Multi-player negotiations

8. Hold up, forward induction and repeated games

9. Private information: Coase conjecture and adverse selection

10. More private information: disclosure, signalling, impossibility

11. Second case study: Nexxtoil