Syllabus
Econ 4170: Economic Contract Theory
Professor Steven Matthews
This Version: March 8, 2024

Description

This course is designed to introduce economics students to the theory of contracts. The origin of economic contract theory was in the 1970s, and has continued at high speed on both the theoretical and the applied economics fronts. It is motivated by real-world settings in which the standard price taking, symmetric information, and complete markets assumptions of general equilibrium theory are violated, thus making GE models inadequate. Non-market institutions determine production and allocation decisions in such settings, and a key ingredient of them is generally a "contract." Most simply, a contract is a set of promises made by two or more agents to each other to perform certain activities e.g., how much of a good to produce, the quality of that good, and how much of it to buy. In most interesting settings there is asymmetric information; some agents know more than others about the state of the world, or what effort choices they made in the past, or about their inherent abilities. The ultimate contracts that are agreed upon are determined via bargaining as opposed to impersonal market exchanges. How a contract is enforced, either explicitly via a third party (Court) or implicitly through the future interactions of the parties, determine in part the nature of adopted contracts. In dynamic contexts, central questions concern how adopted contracts change (are renegotiated) over time.

These are the ideas we shall study. Applications will also be examined, such as regulation, insurance markets, price discrimination, auctions, and hold-up.

Logistics

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Prerequisites. Intermediate microeconomic theory (Econ 2100, formerly 101). Multivarible calculus (through Math 1080 or 1410), basic probability theory (including continuous random variables, Bayes rule), optimization (first- and second-order conditions). A knowledge of basic game theory will be useful – the textbook has a short Appendix on game theory.

Teaching Methodology. Lectures. Notes/slides posted on Canvas. Problem sets.

Class Time and Place. MW 3:30-5pm in PCPE 510 (NEW ROOM). Except for three dates listed below.

Professor Office Hours. 1:15-2:30 Fridays in PCPE 618, and by appointment.

TA Office Hours. Tuesdays 9-10am in PCPE 500. And 9-10am Thursdays in PCPE 208. Let her know beforehand if you plan to come.

Assessment. Six problem sets,[1] two in-class midterms. Each exam will count 25%, and the problem sets (as a whole) will count 50% towards the course grade. If you are unable to take a midterm for an excused reason,[2] the homework will count for $66.\bar{6}\%$ and the remaining exam for $33.\bar{3}\%$. Class participation, which will include discussion chains on Canvas, will count in borderline cases.

Upload Policy. Upload to Canvas, as one pdf file, your solutions to each problem set, by 11:45pm of the due date (see below).

Required Textbook.

(BS) Salanié, Bernard. *The Economics of Contracts*, 2nd edition.

Supplementary and Optional Texts.

MWG and JR are advanced microeconomic theory textbooks that have some chapters on contract theory. BD is entirely on contract theory. All three books are intended for graduate level courses.

(MWG) Mas-Colell, Whinston, and Green, *Microeconomic Theory*. Chapter 14.

(JR) Jehle and Reny, *Advanced Microeconomic Theory*, 3rd edition. Chapters 8-9.

(BD) Bolton and Dewatripont, *Contract Theory.*

Important Dates

First Class	Monday, 1/22
PS 1 due	Fri, 2/9
PS 2 due	Sun, 2/25
Spring Break	March 2-10
PS 3 due	Sat, 3/16
Room TBA	3/13
Midterm 1	Wed, 3/20
PS 4 due	Sun, 3/31
PS 5 due	Sun, 4/14
In PCPE 625	4/22 and 4/24
PS 6 due	Sun, 4/28
Midterm 2	Wed, 5/1

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[1]One of your problem sets that has your worst score will be dropped.

[2]The definition of an excused absence, departmental regrade policies, and so on can be found at https://economics.sas.upenn.edu/undergraduate/course-information/course-policies.

Tentative Outline of Topics

1. Adverse Selection

   Mechanism Design Overview

   Two-Type Price Discrimination

   Continuous-Type Price Discrimination

2. Adverse Selection Applications

   Regulating a Firm

   Monopoly Insurance

   Auction Design

3. Moral Hazard

   Edgeworth Box Example

   The More General Case

   Multi-Tasks

4. Moral Hazard Applications

   Ownership

   Insurance

   Wage Determination

5. Dynamics of Contracts

   Adverse Selection Settings

   Moral Hazard Settings

   Relational Contracts

6. Incomplete Contracts

   a) Hold-up and Ownership

   b) Renegotiation