

Social Choice Theory (Econ 211)
(With focus on voting theory)
Spring 2014
Monday and Wednesday 10:30am – 12pm at GLAB 101.
Instructor: SangMok Lee

Course Logistics

Office hours: Tuesday 11am – 1pm (McNeil 462)
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Teaching Assistant: Nicholas Janetos
TA Office Hours: Friday 11am – 1pm (McNeil 538)
TA Email: njanetos-at-sas.upenn.edu

- No Class on Mar 24. Instructor's office hours on Mar 25 will be changed to Mar 27.
- We will use Canvas for announcements, handouts, notes, homework assignments etc.

Course Description

Summary: The course will provide an introduction to social choice theory, which is a formal analysis of general preference aggregation and voting rules. The course also covers modern analysis on voting by using game theory, mechanism design, empirical analysis, and laboratory experiments.

Prerequisites: Econ 101 (Intermediate Micro Theory), Math 104 and either Math 114 or Math 115 (Calculus Part I and II). Econ 212 (Game Theory) will be very useful.

Textbooks: The following textbooks are recommended, though they are not required. There will be lecture notes, supplemented by papers and handouts.

Recommended textbook:

Social Choice Theory: An Introduction, by Jerry S. Kelly, Springer-Verlag, 1988.

* This book is out of print. Most parts of the book will be scanned and available on Canvas.

Liberalism against Populism, by William H. Riker, Waveland Press, 1982.

* Available at Penn bookstore. Good source of real applications and exercises.

Fair Division and Collective Welfare. The MIT Press, 2004, by Hervé Moulin.

* For possibility results (Topic II-3), the class will closely follow this book.

Other textbooks:

- *A Primer in Social Choice Theory*. Oxford University Press, Revised Edition, 2009, by Wulf Gaertner.

Requirement and Grading Policy

1. Grades

| | | <u>Due/Exam dates</u> |
|--------------------|---------|----------------------------|
| Three problem sets | 3 x 10% | Feb 10, Mar 31, Apr 28 |
| Two midterm exams | 2 x 20% | Feb 17, Apr 7 (class time) |
| Term paper | 1 x 30% | May 5 (due 5pm) |

2. **Assignments** will be given one-week prior to the due dates and will be due at the start of the lecture on the day they are due. You can submit in class, or electronic submission via email is also allowed. Collaboration on homework assignments is allowed and encouraged, but final solutions must be written independently. Each student should participate fully in solving each problem and understand the answer.

3. **Midterm examinations** will be *in-class* and *closed-book*. Collaboration on the examinations is prohibited.

4. **Term paper:** A student is required to study any cases on collective choices. One option is to evaluate a choice rule currently used in an organization. You are expected to clearly state the choice rule and examine pros and cons. If the rule suffers from drawbacks, you may propose an alternative choice rule and justify the new rule by discussing potential outcomes. Another option is to propose new ideas for choice rules in a situation where a formal choice rule has not yet been implemented. During the course, we will discuss a few term-paper ideas. I encourage you to search for a case from your personal experiences, rather than, for example, presidential elections. The paper should not exceed 10 pages with 1.5 spacing. 10 pages include figures, graphs, tables, and a cover page (if you want to have one), etc. The originality of the idea and logically tight arguments are much more valued than the length of the paper.

Topics to be covered (Subject to change)

I. Elements of Social Choice Theory

1. Intro: Course Introduction. Motivating examples. Some mathematical background.
2. A Special Case with Two Alternatives: Simple majority. May's theorem, Condorcet winner. Condorcet paradox.: Kelly(Chapter 1 and 2), Riker (Chapter 3, Chapter 4.B)

II. General Social Choice Theory

1. General difficulties of preference aggregation: Binary relations. Preferences. Preference aggregation rule. Arrow's Impossibility Theorem with a sketchy proof: Kelly (Chapter 6, 7), Riker (Chapter 3, Chapter 4.A, 5. A-B)
2. Voting rules: Majoritarian methods (Sequential majority. Copeland voting rule). Positional methods (Plurality. Approval voting. Borda score voting rule). Evaluating voting rules. Gibbard-Satterthwaite Impossibility Theorem: Kelly (Chapter 5, 10), Riker (Chapter 4, 6)

* Students are not required to read journal articles.

Dasgupta, P., & Maskin, E. (2008). On the robustness of majority rule. *Journal of the European Economic Association*, 6(5), 949-973.

3. Possibility Results: Decision under restricted domains (single peaked preferences, voting over resource allocation, and intermediate preferences), Approval voting: Kelly (Chapter 2, Chapter 3, Chapter 12), Riker (Chapter 4.E, Chapter 5.B-C), Moulin (Chapter 4).

III. Strategic Voting

1. Background: Game Theory. Nash Equilibrium.
* Most undergraduate game theory textbooks cover Nash Equilibrium in first few chapters.
2. Strategic Voting: Illustration with examples. Case studies. Theoretical and Empirical Analysis.

Myerson Roger, and Robert Weber. 1993. A Theory of Voting Equilibria. *American Political Science Review* 87:102-14.

Kawai, Kei, and Yasutora Watanabe. 2013. "Inferring Strategic Voting." *American Economic Review*, 103(2): 624-62.

IV. Voting and Information Aggregation

1. Background: Bayes Rule. Bayesian Game. Bayesian Nash Equilibrium.
2. Condorcet Jury Theorem and Strategic Voting.

Austen-Smith and Banks (1996): Information Aggregation, Rationality, and the Condorcet Jury Theorem; *American Political Science Review* Vol. 90(1)
3. Comparing voting rules: Theory. Laboratory experiment. Extension to Voting with Deliberation.

Feddersen, T., and W. Pesendorfer (1998): Convicting the Innocent: The Inferiority of Unanimous Jury Verdicts under Strategic Voting, *The American Political Science Review*, 92(1)

Guarnaschelli, S., R. D. McKelvey, and T. R. Palfrey (2000): An Experimental Study of Jury Decision Rules, *The American Political Science Review*, 94(2)

Gerardi, Dino, and Leeat Yariv. "Deliberative voting." *Journal of Economic Theory* 134.1 (2007): 317-338.

Goeree, Jacob K., and Leeat Yariv. "An experimental study of collective deliberation." *Econometrica* 79.3 (2011): 893-921.

V. Voting with Side Payments:

1. Public good and preference revelation: Voluntary Contribution. Pivotal Mechanism.

Campbell, Donald E., *Incentives: Motivation and the Economics of Information*, Cambridge University Press, 2006. Chapter 8.

2. Vote market: Monetary transfers within electorates.

Alessandra Casella & Aniol Llorente-Saguer & Thomas R. Palfrey, 2012. "Competitive Equilibrium in Markets for Votes," *Journal of Political Economy*, University of Chicago Press, vol. 120(4), pages 593 - 658.

Philipson, T. and J. Snyder (1996), Equilibrium and Efficiency in an Organized Vote Market, *Public Choice*, 89, 245-265.

3. Vote bidding/buying: Monetary transfers between a planner and electorates.

Mueller, Dennis C. *Public Choice III*. Cambridge University Press, 2003. Chapter 8.

Jacob K. Goeree and Jingjing Zhang (2012) Electoral Engineering: One Man, One Vote Bid, working paper, University of Zurich.

E. Glen Weyl (2013), Quadratic Vote Buying, working paper, University of Chicago

Course Policies

1. Late assignments and final paper will not be accepted without either proper prior arrangement or a compelling and verifiable reason.

2. All hand written answers to exam questions should be legible. Anything that the TA or I cannot read or understand is wrong.

3. Assignments and exams will be returned to you during class. You are responsible for picking them up. Your exams will be scanned to deter cheating.

4. A request for a re-grade of a problem set or an exam must be submitted to me in writing within 1 week after the graded assignment has been returned. In such a case, I will reevaluate your complete homework set or exam.

5. If you miss a mid-term exam, with a verifiable and justifiable reason, there will be a make-up oral exam.