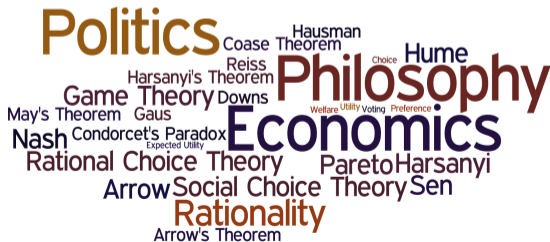


PHPE 400

Individual and Group Decision Making

Eric Pacuit
University of Maryland
pacuit.org



First Steps



1. Make sure you are signed up and can login to Piazza (available on the course website)
2. Sign up for <https://app.tophat.com/e/384276> with join code 384276. *You must purchase the pro-subscription.*
3. Read the course policies (<https://phpe400.org/policies>) and syllabus (<https://umd.instructure.com/courses/1352001/assignments/syllabus>).

To Do



1. Answer the introductory quiz on Tophat (due Friday):
<https://app.tophat.com/e/384276/content/1117900>
2. Complete Problem Set 1 by Friday, September 1 at 11pm:
<https://umd.instructure.com/courses/1352001/assignments/6513840>

Grading



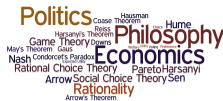
Participation 30%

Problem Sets 40%

Midterm 15%

Final Exam 15%

Online Tools



Course Website

<https://umd.instructure.com/courses/1352001>

Online Discussion

https://umd.instructure.com/courses/1352001/external_tools/42711

Participation Questions

<https://app.tophat.com/e/384276>

Readings and Course Notes

<https://umd.instructure.com/courses/1352001/modules>

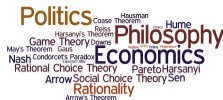
<https://notes.phpe400.info>

Practicalities: Math



The course is completely self-contained, but it does require that you become comfortable with some mathematical notation.

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- ▶ Spend some time familiarizing yourself with the relevant mathematical notation: sets $X = \{a, b, c\}$, subset of $X \subseteq Y$, element of $x \in X$, cross-product $X \times Y = \{(x, y) \mid x \in X, y \in Y\}$, relations $R \subseteq X \times X$, functions $f : X \rightarrow Y, \dots$

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https:

`//notes.phpe400.info/mathematical-preliminaries/`

Practicalities: Math



- ▶ Ask questions, especially about notation that you do not understand (no matter how trivial).
- ▶ The participation questions are designed, in part, to make sure you understand the mathematical notation.
- ▶ It is important to use the proper notation on the problem sets and the exams (otherwise we won't understand your answers).
- ▶ Attend the discussion sections.

Practicalities: Math



Economic models consist of clearly stated assumptions and behavioral mechanisms. As such, they lend themselves to the language of mathematics. Flip the pages of any academic journal in economics and you will encounter a nearly endless stream of equations and Greek symbols...

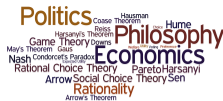
Practicalities: Math



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(Rodrik, pp. 22-23)

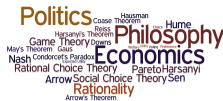
D. Rodrik. *Economic Rules: The Rights and Wrongs of the Dismal Science*. W.W. Norton, 2015.

What is this course about?



1. “Rational choice” explanations of social phenomena:
What does it mean (for an individual/group) to make a *rational* (or *reasonable*) decision as opposed to *irrational* (or *unreasonable*) decision?
2. Identifying and understanding the idealizations and other assumptions underlying the mathematical models used in Philosophy, Political Science, and Economics.

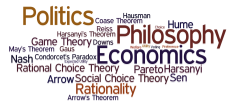
(Useful?) Assumptions



In truth, simple models of the type that economists construct are absolutely essential to understanding the workings of society. Their simplicity, formalism, and neglect of many facets of the real world are precisely what makes them valuable. These are a feature, not a bug. What makes a model useful is that it captures an aspect of reality. What makes it indispensable, when used well, is that it captures *the most relevant aspect of reality in a given context*.
(p. 11, Rodrik)

D. Rodrik. *Economic Rules: Why Economics Works, When it Fails and How to Tell the Difference*. Oxford University Press, 2015.

Decision Problems

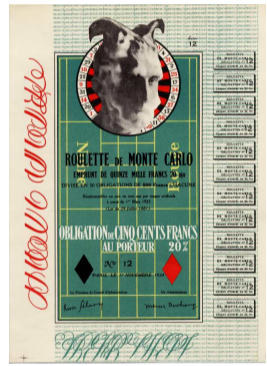


Decision Problems



Individual decision-making (against nature)

- ▶ E.g., Gambling



Decision Problems



Individual decision-making (**against nature**)

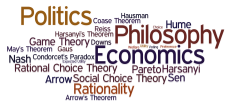
- ▶ E.g., Gambling

Individual decision making in **interaction**

- ▶ E.g., Playing chess



Decision Problems



Individual decision-making (against nature)

- ▶ E.g., Gambling

Individual decision making in interaction

- ▶ E.g., Playing chess

Collective decision making

- ▶ E.g., Carrying a piano



Decision Problems



Individual decision-making (against nature)

- ▶ E.g., Gambling

Individual decision making in interaction

- ▶ E.g., Playing chess

Collective decision making

- ▶ E.g., Carrying a piano
- ▶ E.g., Voting in an election

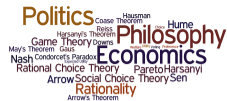


Topics: Rational Choice Theory



1. Preference, Choice and Utility
2. Game Theory
3. Social Choice Theory, Voting, and Judgement Aggregation

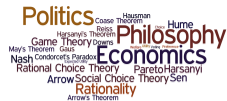
Simple Choice Model



Menu



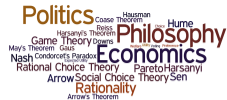
Simple Choice Model



Choice



Simple Choice Model



Rational Choice?



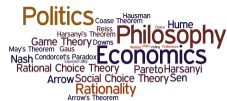
Simple Choice Model



The concept of “preference” is central to economic theory. Economists typically take preferences to be predetermined or “given” facts about individuals and, for their purposes, not in need of explanation or subject to substantive appraisal. Economic analyses begin with an individual’s preferences, whatever that may be.

(p. 56, Hausman, McPherson and Satz)

Simple Choice Model



Rational Choice?



Preference



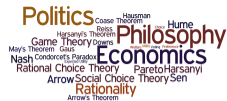
P



P



Simple Choice Model



Rational Choice



Preference



P



P



Simple Choice Model



Irrational Choice



Preference



P



P



Preferences *and* Beliefs



- ▶ **Option uncertainty:** What type of wine is it? Is the red wine sweet or dry? Is the white wine spoiled? Is the lemonade very sugary? . . .

Preferences *and* Beliefs



- ▶ **Option uncertainty:** What type of wine is it? Is the red wine sweet or dry? Is the white wine spoiled? Is the lemonade very sugary? . . .
- ▶ **Context:** What are we having to eat? What time of day is it? How many drinks have you had? Are you driving home? Are there other drink choices that are available (e.g., a beer or a soda)? . . .

Preferences



Preferring or choosing x is different than “liking” x or “having a taste for x ”:
one can prefer x to y but *dislike* both options

Preferences are always understood as *comparative*: “preference” is more like
“bigger” than “big”

Concepts of *preference*



1. *Enjoyment comparison*: I prefer red wine to white wine means that I *enjoy* red wine more than white wine.

Concepts of *preference*



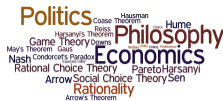
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Rational choice



A decision maker chooses rationally if her preferences are rational and there is nothing available that the decision maker prefers to what she chooses.

Rational choice



A decision maker chooses rationally if her **preferences are rational** and there is nothing available that the decision maker prefers to what she chooses.

Mathematically describing preferences

notes.phpe400.info/mathematical-preliminaries/sets.html

notes.phpe400.info/mathematical-preliminaries/relations.html

Answer the mathematical notation quiz on Tophat before your discussion section on Friday (the answers will be discussed during sections):

https://app.tophat.com/e/384276/content/1117900::f6a2a05b-dd5c-44fd-9297-fd322cfab11a?open_fullscreen=true