Introduction and Overview

AEM 4140: Behavioral Econ and Managerial Decisions

People and Places

- Instructor: Geoff Fisher (gwf25@cornell.edu)
- TAs:
  - Nick Grandstaff
  - Tess Lallemant
- Syllabus is on Canvas
  - Slides posted after lecture
- Lecture (Monday) and Labs (Wednesday)
- Please talk to me if there are accommodations you need through SDS

Discussion Section Lab Organization

- Labs on Wednesday with TAs

- Participate in surveys/games with others

- $40 course fee
  - All money will be returned by the end of the semester
  - Please bring in cash during labs

- Attend only the time you're registered for

Discussion Section Lab Rules

- Bring a laptop that has enough battery

- Only open program on computer should be a browser tab to access the internet

- Other work and phones (/other devices) should be put away and not used

- Must remain quiet during labs. You should raise your hand to speak if you have a question.

- No remote participation allowed.

- Must arrive on time.

Attendance

- I expect you will come to class and discussion when you are healthy and able to do so

- You can miss two <u>lab sessions</u> before your grade is penalized. Talk to me if you are near this limit and have an issue.

- You do not need to tell me (or the TAs) if you are absent from lecture or missing one of your two free absences from labs

Would you like to be a Data TA?

- We are recruiting Data TAs to help us analyze experiment data from our lab sections.

- Every Wednesday after we finish all lab sections, we will send you the raw data collected from the experiments along with data analysis guidelines. Your responsibility is to create 2-5 graphs/analyses that will be presented during lectures on Mondays.

- It is a great opportunity to improve your data analysis skills (and to take a sneak peek into the experiment results). As data TAs you need to sign up for a 2 credit (graded) course where your grade will be determined by how well you perform the above tasks.

- Please email me and the graduate TAs if you are interested <u>ASAP</u>!

Grading

- Exam – 40%
    - In class exam, short answer, one page of notes allowed => ideally low stress
- Group Project and Presentation – 60%
    - Analyze a previous business failure
        - Popular resource: https://en.wikipedia.org/wiki/List_of_corporate_collapses_and_scandals
        - But you can be more creative!
    - Offer explanations for the failure using terms we have examined
    - Timeline given on syllabus

Behavioral Econ and Managerial Decision Making

- Why should you take this course?

- Managers must understand human behavior to be successful—e.g., they must understand and be able to predict the behavior of competitors, workers, customers, suppliers, government regulators, etc.

What is behavioral economics?

- Behavioral economics attempts to incorporate more realistic assumptions into economics
- This is to both better understand the behaviors we see in the world and to improve our analyses of welfare and policy.

Standard Model

- Assumptions
  - People maximize expected utility
  - People exponentially discount future utility
  - People exhibit pure self-interest
  - People are Bayesian information processors
  - People behave in their own best interests
- Evidence casts doubt on all of these and other standard assumptions

Standard Model Puzzles

- Why do sellers often value their goods more than buyers?

- Why are people willing to drive across town to save $15 to purchase $30 coffee pods, but not to purchase a $125 jacket?

- Why are milk and eggs in the back of the store given that they are some of the most popular groceries purchased?

- Why are people delighted to hear they will get a 10% raise, only to be upset to find out that a colleague is getting 15%?

- Why do people make promises to go on a diet, only to give it up later?

- Why do people postpone fun things, like a fancy dinner, rather then have them immediately?

- Why is my spouse unwilling to buy herself nice things but then delighted when I use our joint bank account to get them for her anyway?

Standard Model Puzzles

- Maybe we can better understand individual and group behaviors by taking account of insights from
  - Psychology
  - Sociology
  - Neuroscience
- We are interested in systematic departures that are likely to be important in economic contexts
- We want to be constructive, not destructive
  - Should improve economic analysis

History of the Field

- Classical and neoclassical approaches (late 18th – mid 19th century)
  - Standard to think that economists did not integrate psychology in their work
    - Daniel Bernoulli
      - Theory of choice under risk
      - Brought mathematical rigor by allowing simple assumptions about motivation
  - But not always true
    - Adam Smith
      - Wrote Wealth of Nations but also wrote the Theory of Moral Sentiments
  - Since economics and psychology were relatively new at the time, most sought a rigorous grounding comparable to natural sciences
    - People behave rationality and are utility maximizing

History of the Field

- Post-War Economics
    - The general trend in economics was to largely ignore psychology
    - Instead, there was interest in measuring variables, estimating economic parameters using equations and strong statistical techniques, and precise results
    - The main approach at this point did not question the accuracy of behavioral assumptions or attempt to understand why individuals behave as they do

History of the Field

- Rise of Behaviorism in Economics
  - Some *anomalies* in individual decision making began to emerge in 50s and 60s
    - Anomalies - behaviors that are inconsistent with "standard" economic assumptions
  - Kahneman and Tversky (1970s)
  - Thaler (1980)
  - Behavioral research has exploded since then

Anomalies

- An example of a behavioral anomaly is shown in an experiment that asks consumers the question:
    - Imagine that you are very pressed for time and need both a new car and a new TV, but do not have time to get both today. Both the TV you want and the car you want are on sale today only. The car is 10% off and the TV is 50% off. Which would you get?
- The results are fascinating: Most people choose the TV, foregoing the much larger cash savings on the car

How do we learn about anomalies?

- We conduct experiments.
  - Experiments have participants evaluate either real or hypothetical prospects that are manipulated by an experimenter.
- Why?
  - Control
  - Causal ordering
  - Replication
- Field observations do not allow for all of these.

Experiments vs Field Studies

- Experiments
  - Randomization to establish causality
    - Higher internal validity (e.g., the degree of confidence that the causal relationship being tested is trustworthy and not influenced by other factors or variables)
  - Does it generalize to real-world settings?
    - Lower external validity (e.g., the extent to which results from a study can be applied/generalized to other situations, groups, or events)
- Field Studies
  - But often hard to establish causality
    - Lower internal validity
  - Examine real-world behavior
    - Higher external validity

Types of Experiments

- Laboratory Experiments--Best for testing theory.
  - Best control and opportunities for replication.
  - Can exactly duplicate the assumptions used in the necessarily simple theory.
  - If theory fails in the lab, it won't work in the field.
- Field Experiments--Best for stress testing theory.
  - Simplified theoretical models necessarily exclude factors that are present in the field.
  - Can reveal missing factors for theories that were not rejected in the lab.
  - Since a significant amount of control is lost, missing factors can be brought back to the lab.

Types of Experiments

- All types of experiments are useful
- Often start with laboratory experiments
- If theory is not rejected, do field experiments
- If the field experiments reveal something is missing, modify theory and go back to the lab.
- No single experiment is perfect and has unquestionable data. Just one small step in a big loop.

Experiment Guidelines

- Use clear and unbiased instructions

- Use salient rewards

- Start with a pilot experiment

- Deception?

- Change one thing at a time

- Plan statistical analysis

- Businesses run experiments all the time

Lessons from Experimental Econ

- Psychologists concluded that people were often "irrational" using experiments with one shot decisions

- When Vernon Smith tested market performance with experiments, the first round in a typical supply/demand setting or auction was quite poor

- But after several repeated rounds, efficiencies often exceeded 90 or 95%.

- Early conclusion was that people always learn to be rational in markets.

- Later experiments showed this was not always true

Lessons from Experimental Econ

- Some anomalies persist no matter how much experience (and even hints) people are given.

- This course focuses on these persistent anomalies that are apparently part of our "hard wiring" and can influence us through fast automatic impressions about what we should or should not do.

- Our initial responses can cause anomalies
  - Or in some cases, they can be fantastically accurate and helpful if we have evolved the mental machinery to solve a problem.

Job Search Example

- A case in point is any kind of a search like a job search or search for a house to buy

- In some contexts, we are very good at solving these types of problems. Consider a job search experiment as an example.

- The experiment is designed as follows:

  - Possible wages range from 0 to 200 cents

  - In each round of your search you draw <u>one</u> of these equally likely wages randomly and must decide if you want to take the job or keep searching. Each additional round of search costs you 5 cents.

  - When do you optimally stop searching? If you stop you get the wage

Job Search Example

- The wage at which you stop searching is called the *reservation wage*. If you draw that wage or greater on a round, you stop searching. So, your minimum acceptable wage is your reservation wage.

- How do you calculate the reservation wage mathematically?

Job Search Example

Imagine that you get a wage draw of 0.

Should you keep searching?

Job Search Example

Imagine that you get a wage draw of 0.

Should you keep searching?

The expected value of your improved wage on the next draw is

1/200(1 cent) + 1/200(2 cents) + 1/200(3 cents) +……..+ 1/200(200 cents)= 100.5 cents but to search costs you 5 cents.

So, on average, you expect to make 100.5 – 5 = 95.5 cents

Yes, you should search again since the expected benefit is 95.5 cents

Job Search Example

Now imagine you draw 200 cents on the next round.

200 is much better than the net benefit of another search

Another search improves your wage by 0 cents but costs you 5 cents, so you should stop searching and accept the wage.
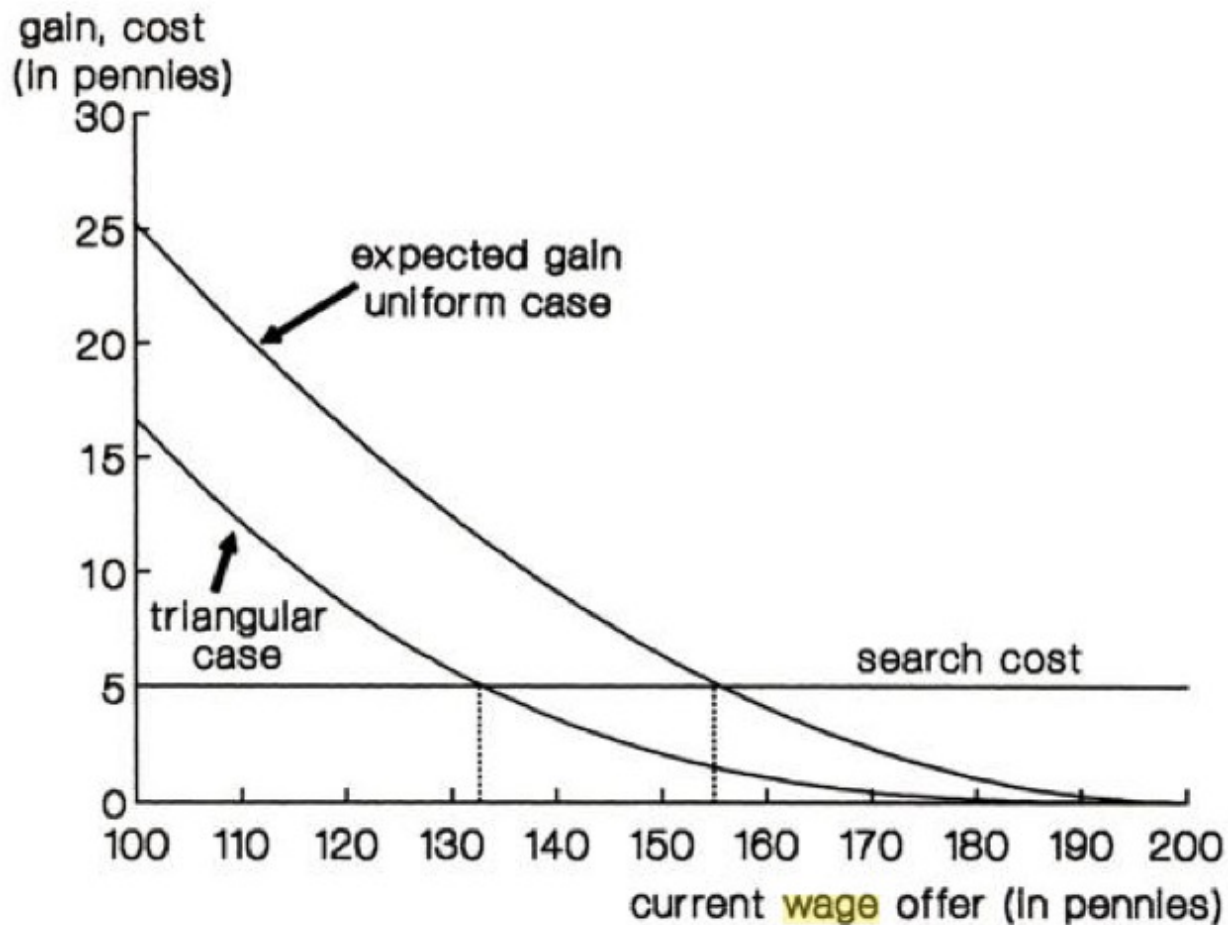
Job Search Example

Where *w* is the current wage draw, *x* is a possible wage value drawn, and *f(x)* is the probability (not necessarily uniform) of drawing *x*, the net benefit of another round is the left hand side of

$$\sum_{x=w+1}^{200} (x - w)f(x) = c$$

Set equal to *c*, the cost of searching, and solve for *w* = reservation wage

Job Search Example

The optimal reservation wage is 155 for the uniform distribution case and 133 in the triangular distribution case.

Job Search Example

Treatment: Distribution (c, sequence)	Optimal R.W.	Mean Reported Sell Price
triangular ($c=5$, random)	133	135
triangular ($c=5$, fixed)	133	136
triangular ($c=5$, fixed)	133	136
uniform ($c=5$, random)	155	157
triangular ($c=10$, random)	115	128

Job Search Example

- Participants had no idea how they made their choices
- Essentially based on intuition
- Could you have figured out the mathematically optimal reservation wage in such an experiment?
- Animals face this problem all the time
  - The coyote looking for breakfast must decide weather to chase the first squirrel it sees or hope to find a rabbit by waiting.
- Survival in a competitive natural environment requires optimal search.

Survey due Tomorrow at 12pm

- https://cornell.ca1.qualtrics.com/jfe/form/SV_aV1PBHT2dnwsHtA