A (Too Short) Overview of Behavioral and Experimental Economics

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May 28, 2024
KIEP

General overview

What is *behavioral economics*?

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

Some "standard" economic assumptions:

- ▶ Expected utility maximization.
- ▶ Exponential discount of future utility.
- ▶ Pure self-interest.
- ▶ Bayesian information process.
- ▶ Behavior in best interests.

Starting point for behavioral economics:

- ▶ Evidence from psychology casts doubt on all of these (and other) "standard" assumptions.

General overview

Goal of behavioral economics:

- ▶ Better economic analyses & conclusions.
- ▶ For example, perhaps we can better understand savings-consumption behavior, labor-market behavior, the consumption of addictive products, and other economic behaviors if we let our analyses be guided by insights from psychology and related fields.

A closely related field: "behavioral decision research" (a.k.a. "judgment & decision making"):

- ▶ Behavioral decision research attempts to develop descriptively accurate models of human judgment and human decision making.
- ▶ No clear lines between these two fields. Perhaps behavioral economics is more interested in systematic departures that are likely to be important in **economic contexts**.

General overview: some comments

▶ Behavioral economics is not a negation of "standard" economics. (Who defines the standards?)

▶ Behavioral economics addresses standard economic questions with standard economic methods, except that we consider modifications to "standard" economic assumptions.

▶ Behavioral economics is constructive, not destructive—the goal is to improve economic analyses.
  ▶ Indeed, behavioral models often do not make different predictions, but rather make additional predictions.
  ▶ That is, "standard" predictions are often regarded as a special case of the behavioral models.

▶ Behavioral economics is perhaps most important for its welfare implications. [One additional assumption leading to one additional prediction] may not be that meaningful.

How the behavioral economics literature typically evolves

- ▶ Experiments (and sometimes field studies) identify "anomalies," that is, behaviors inconsistent with "standard" economic assumptions. [First wave of behavioral economics]

- ▶ Alternative assumptions are postulated as an explanation for those anomalies. Theoretical work draws out the implications of those alternative assumptions for economics (beyond explaining the anomalies). [Second wave of behavioral economics]

- ▶ Field studies and new experiments test these implications. [Third wave of behavioral economics]

Caveats: Focusing the first or the third wave may give a wrong impression about behavioral economics.

Economics experiments

Behavioral economics $\neq$ experimental economics

- ▶ Experimental economics is a small field of economics that considers how experiments are properly designed and analyzed.
- ▶ An experiment is a method to collect data in a controlled environment. Experiments are used by many behavioral economists, but they use it as a method, not a field of study.

  (Imagine that you run simple regressions on Stata. You don't say that Econometrics is in your research interests.)

Experimental economics is relatively new.

> *Economists (unfortunately)...cannot perform the controlled experiments of biologists because they cannot easily control other important factors. Like astronomers or meteorologists, they generally must be content largely to observe.*
>
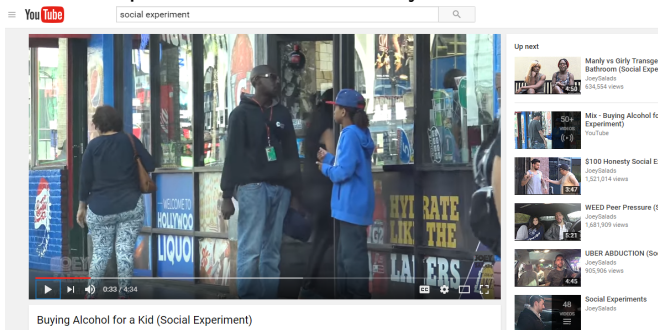> *- Samuelson and Nordhaus, 12th edition (1985)*
>
> *Experimental economics is an 'exciting new development'.*
>
> *- Samuelson and Nordhaus, 14th edition (1992)*

Samuelson and Nordhaus were *early* recognizers.
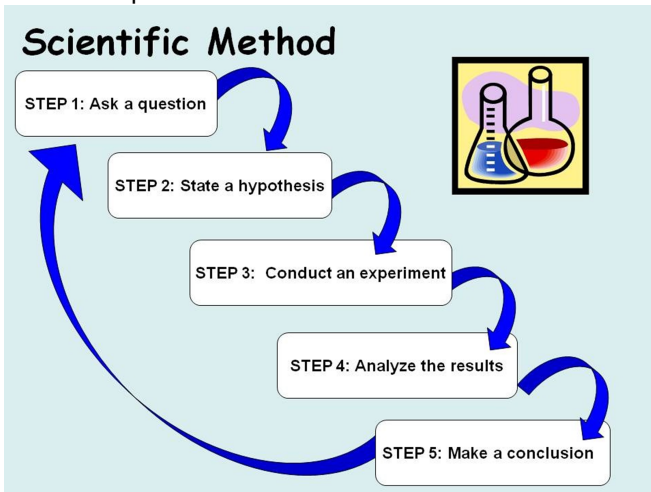
Economics experiments are not...

▶ "Social experiments": What many Youtubers do...

▶ Psychology experiments: Boundaries are a little blurry...

Economics experiments are more like...

- ▶ Science experiments

Scientific Method

STEP 1: Ask a question

STEP 2: State a hypothesis

STEP 3: Conduct an experiment

STEP 4: Analyze the results

STEP 5: Make a conclusion

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- ▶ Don't say you know nothing about experiments. [LINK]

A typical controlled experiment

Suppose you want to test a new drug. How would you do?

- ▶ Recruit human subjects.
- ▶ Randomly split them into two groups.
- ▶ One group, called the treatment group, gets the drug. The other group, called the control group, gets a placebo.
- ▶ Compare the observations of interest between two groups.

What's the difference? The observations of interest may be subject to the existence (and behaviors) of the experimenter, and the subject's will *can* alter the observations. (Overall it is called the *experimenter demand effect*. I will discuss it later.)

Distinctive traditions of experimental economics
And recent discussions

- ▶ No deception (Most distinctive)
- ▶ Incentives
- ▶ Control of beliefs
- ▶ Abstract framing
- ▶ Repetition or stationary replication
- ▶ Complete reporting of methods
- ▶ WEIRD sample (Least distinctive)

No deception (1/2)

Economists (virtually) never deceive experimental participants.

▶ "Deception" defined as outright lying; incomplete information not considered deception.

▶ Usually justified as maintaining reputation for no deception, for experimental control of subjects' beliefs.

▶ Externality from deception for other experiments can be very harmful.

No deception (2/2)

Some social psychologists deceive subjects as a matter of course.
(YouTuber's "social experiments" use deception explicitly.)

- ▶ There are a number of (psychology) experiments on the effects of deception.
- ▶ Some find that subjects under-report levels of suspicion in "suspicion probes," and become more suspicious in future experiments.
- ▶ Evidence of reputation effects

Note: People have substantially heterogeneous standards in "gray areas" (Charness and Samek, 2022). Are omitting information, misleading without an explicit lie, or using confederates okay? What about fooling people outside of the lab (Bertrand and Mullainathan, 2004; Bursztyn et al, 2021)?

Incentives (1/3)

All (lab) experimental studies published in the AER during 1970–2015 used financial incentives.

- ▶ Partly for reasons of making "economic situations".
- ▶ Partly for experimental control of subjects' motivations.
- ▶ Many psychologists offer course credit instead.

Incentives (2/3): Camerer and Hogarth (1999)

reviewed 74 studies that use high, low, and no incentives:

▶ Incentives affect performance in tasks where effort helps performance, e.g., judgment, memory, and clerical tasks.

▶ Incentives do not affect performance in tasks where intrinsic motivation is high, or effort isn't helpful.

▶ High incentives can hurt performance in some tasks, e.g., choking under pressure, self-conscious anxiety about performance.

Incentives (3/3)

In general, higher incentives:

- ▶ Reduce variance in behavior (i.e., less noise / confusion).
- ▶ Reduce the influence of self-presentation concerns, e.g., people say they are more generous and risk-taking than they are.
- ▶ Otherwise, have little effect on average behavior.

Note: There are new pieces of evidence that the incentives may not matter that much (Rubinstein, 2012; Voslinsky and Azar, 2021). In general, incentives do not worsen the quality of the observations, but sometimes it does (Danz, Vesterlund, and Wilson, 2022).

Control of beliefs (1/2)

Game theory makes clear that knowledge and "common knowledge" can have different effects on behavior.

▶ To establish common knowledge, instructions often read aloud to all participants in a place, typically a lab.

▶ Subjects visually divided but kept in earshot of each other, so it is common knowledge that no additional instructions were given to one group. Sometimes whether information is commonly provided or not leads to different treatment effects (Chen et al., 2021).

▶ Beliefs about fair randomization often crucial for incentive compatibility of payoffs.

▶ Whenever possible, randomization conducted physically (e.g., dice roll), by a subject (for credibility), and publicly.

Control of beliefs (2/2)

Providing different beliefs may sometimes be in the borderline of deception.

- ▶ Several treatments in the same session: common knowledge of information is not guaranteed, or too much exposure of the experimenter demand effect.
- ▶ Random rematch may not be entirely random.
- ▶ Information Provision experiments (Haaland, Roth, and Wohlfart, 2023)

  (Although the average of 100 experts' forecasts is 5%,) "a very credible expert says that the inflation this year will be 15%. What would you do?"

Abstract framing (1/2)

Most economics experiments attempt to have "no context," e.g., Person A and Person B instead of Police and Thief.

▶ Partly because economic theory being tested has "no context." Stag hunt and bank run are different contexts, but the same model can capture the common essence.

▶ Partly because according to game theory, labels may serve as a coordinating device.

(Suppose that subjects can choose one of the two actions. Imagine that I label one as 'clever move' and the other one as 'unbelievably stupid move.')

Subjects will anyway understand the experiment in their own contextual view. Still, abstract framing needs to be maintained to increase validity of the controlled environment.

Abstract framing (2/2)

Some recent experimental studies use more specific framing.

- ▶ Sometimes abstract framing decreases the experiment participants' problem-solving ability.[LINK]
- ▶ Sometimes research question might be tightly related to a specific situation.
- ▶ Still, we need to ensure for the framing not to be experimenter-demand intended.

Vignette studies, as the name tells, adopt very specific framing. They are useful to deliver clear messages, but some claim they are nothing but thought experiments.

Repetition (1/2)
or stationary replication

Many laboratory experiment asks the participants to play similar decisions repeatedly. This is partly to increase the number of observations, and partly to decrease the idiosyncratic noises. Four relevant issues are:

1. How to make the repetition stationary: If you play with a group of fixed members, previous actions and outcomes are likely to affect the current actions. Also, some subjects may exploit this history dependency strategically. Consider a stranger match (or at least random rematch) unless your research question regards history dependency (Andreoni and Croson, 2008).

Repetition (2/2)
or stationary replication

2. How to pay outcomes from multiple periods: Suppose you play with a group of other experiment participants ten times (each time called a period). Paying all periods and paying one randomly-selected period may give different incentives for the participants (Azrieli, Chambers, and Healy, 2018).

3. Strategy method:
   "Among A, B, and C, you got B. What would you do?" vs.
   "What would you do if you get A/B/C? Once you made a decision, you get one of them."
   The latter one is better in terms of data quality, but it is not always applicable, and sometimes exposed to the experimenter demand effect (Brandts and Charness, 2011).

4. Studying preferences for randomization: Especially in stochastic choices, choosing one option may be the realization of randomization (Agranov and Ortoleva, 2017).

Complete reporting of methods

I will revisit it in the afternoon when dealing with research ethics.

▶ We are living in an era of *replication crisis*.

▶ Incomplete reporting of research methods makes your research less replicable.

▶ Cherry-picking some "worth" methods undermines academia.

▶ Almost all respectful journals enunciate it.

WEIRD sample

The laboratory experiment is often criticized that the samples are not representative.

▶ Studies conducted in cognitive science, behavioral economics, and psychology use WEIRD—Western, Educated, Industrialized, Rich, and Democratic—subjects.

▶ Obviously the sample from the WEIRD population does not properly represent the general population.

▶ This WEIRDness tends to be diluted.

▶ It doesn't mean the samples from a more general, and accordingly, heterogeneous population provide outputs with better quality. (For the same treatment effect, more heterogeneity requires more samples. For general population, the experiment payments need to be larger.)

Commonly raised (but answered) questions

▶ Do subjects really "think" to make decisions and "work hard" to earn in the lab? At the worst, they could buy a pizza slice, and at best they could treat themselves nice dinner...

▶ Aren't the stakes too small? Will I be risk averse when I bet 30 cents to get 60 cents with some probability?

⇒ Early experimental economists replicated existing experiments at the countries where the price is low (e.g., $20 could be the country's average monthly income.)

⇒ Vesterlund et al. (2016) report inelastic effort provision with respect to incentives.

Commonly raised (but answered) questions

▶ In real life situations, there is no such "experimenter" who will analyze my choices. What if I would change my decisions due to the existence of the experimenter?

⇒ It is called the experimenter demand effect. Economists have deliberately designed experiments to minimize such unwanted effects. (e.g., double-blind system in ultimatum game.)

⇒ Also, even if the observed choices are biased by the laboratory environment, still it is worth understanding the treatment effects.

⇒ de Quidt, Haushofer, and Roth (2018) report that the experimenter demand effect is not detrimentally large.

Main criticism: external validity

▶ Okay. Let's say you conduct a controlled lab experiment and find some treatment effects. Can we extrapolate the results from the experiment to general environments?

▶ No.

   Of course some studies claim it is yes, but let's focus on the major view.

▶ We should view the results of the economics experiments as the "initial pass" of the test.

Some wrap-up comments on experiments

- "I have a new prediction drawn from my new theory. I'd like to test it in the lab." is a BAD idea.
  - If the experimental evidence is consistent with the theory, "what's the purpose of the experiment? what have we learned from your experiment?"
  - If inconsistent, "so your model is wrong, isn't it?"
- Unless you are interested in Experimental Economics as a field of research, try to come up with better justifications of using experiments. If you have empirical/field data, you must consider them first.