Behavior and Policy: Individual Behavior and Beyond

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The Standard Economic Model of Behavior

- The standard (rational actor) model is constrained by the mathematics of general equilibrium theory.
- "Utility" or well-being, is confined to the satisfaction derived from consuming market goods and services:
- U = f(X,Y,Z)
- A necessary key assumption to make the mathematics work (constrained optimization) is that preferences are self-regarding.
- People consistently and rationally allocate their limited incomes so as to maximize their own well-being.

The standard economic model

- Goes back to the 1870s.
- Little was known about how the brain works.
- Before modern psychology
- Before environmental problems were global
- Before the economy was global

Vilfredo Pareto 1897:

- “It is an empirical fact that the natural sciences have progressed only when they have taken secondary principles as their point of departure, instead of trying to discover the essence of things…Pure political economy has therefore a great interest in relying as little as possible on the domain of psychology.”

- This attitude led economists to focus on *revealed preference*, look at the decisions people make and assume they’re rational. Not how decisions are actually made
- But modern behavioral science has totally changed the traditional view.

Behavioral Economics

- In recent decades, many economists have stepped away from the standard model.
- Nobel Prize winners: Herbert Simon (1978), Amyarta Sen (1998), George Akerlof (2001), Joseph Stiglitz (2001), Daniel Kahneman (2002), Elinor Ostrom (2009), Robert Shiller (2013)
- Key assumption that has been dropped is that behavior is self-regarding.
- This is in line with the widely accepted view among natural scientists that humans are uniquely social animals. Humans cooperate with non-kin to a degree not seen in other mammals.

Behavioral Economics

- Behavioral economists look at how people actually make decisions. It combines psychology, neuroscience, anthropology, and sociology
- It assumes bounded rationality – people have limited ability to use all the information available to them
- People frequently make predictable and avoidable mistakes.
- Recognizing this can enrich public policy. Behavior based policy goes beyond “getting the prices right.”

Behavior and Governance at Three Levels

- Individual – Most of the focus of behavioral research and policy has been on the behavior of individuals
- Social – Some research has been done on how individuals function as member of social groups. A little research has been done on social decision-making.
- The global economy – Relatively little work has been done on behavior and global governance.

1st level – Individual Behavior

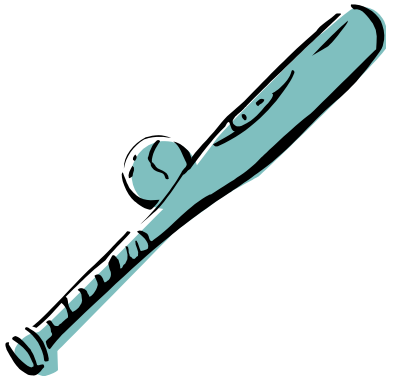
- Policies are beginning to recognize bounded rationality. (Nudge by Thaler and Sunstein)
- Organ donation example: opt in or opt out
- Designing pension plans – start low and take future contributions from raises
- Energy-efficiency policies/programs
  - Opt out home energy reports, time of use electricity metering, etc.

Key Findings from Behavioral Economics

- Loss aversion
- Risk aversion
- Endowment effect
- Licensing effect
- Relative income effect (Greg may cover?)
- Hyperbolic discounting (Greg?)
- Anchoring (Greg?)

These findings offer opportunities to test new policy and program designs

Bounded rationality: Thinking is Costly



- **Example of Bounded Rationality**
- **A baseball and bat together cost $11. The bat costs $10 more than the ball. How much does the ball cost?**

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Fuel efficiency information

- Suppose you have two cars and you can replace only one of them.
- You drive both of them the same number of miles each month.
- Car one: gets 10 miles per gallon, you can replace it with one that gets 20 miles per gallon
- Car two: gets 20 miles per gallon, you can replace it with one that gets 100 miles per gallon.
- Which one should you replace?
- Replace car one. To go 100 miles you use 5 gallons less
- Replace car two. To go 100 miles you use 4 gallons less

Too many choices?

- Marketing studies have shown that people are more likely to make a purchase if they are given only a few choices.
- Too many choices increases the chance that a wrong choice might be made.

2nd level - Community resource management

- People make decisions as member of social groups
- Importance of peer group reference points

Social context is critically important

Climate change – “Facts” may not be as important as the belief system of your peer group. If you’re a conservative white male in the South, your peers are not likely to believe in climate change.

What are the costs to you of expressing your concern about global warming? (losing the respect of your peer group)

What are the benefits? (none?)

Using peer group markers as a policy tool

Examples:

- Solar panels as a social values marker for environmentally friendly behavior
- Framing energy efficiency as “national security” rather than “climate change protection”
- Comparison with neighbors in Home Energy Reports sent by utilities


Don't mess with Texas.
REAL TEXANS DON'T LITTER
ENTER HERE >>

3rd level - The global economy

- This is the big problem. Human behavior is constrained and reinforced by the imperative of growth and accumulation.
- How can behavioral science help bring nation states together to slow greenhouse gas emissions?

Global cooperation is required

- To succeed we must overcome:
- Competition between countries with unequal stages of development
- Competition between interest groups within countries
- Intergenerational discounting – costs are borne today, benefits accrue to future generations

The public goods game

- A base example, there are many variations
- 10 players, 10 rounds
- In each round, you can either keep $1 for yourself and no one else gets anything,
- Or you can get $.50 for yourself and everyone else gets $.50.
- If everyone is selfish, each person gest $1 per round or $10 total.
- If everyone cooperates, each person gets $5 per round or $50 total
- BUT if one person is selfish and the other 9 cooperate, the selfish person gets $1 + $4.50 per round or $55 total and everyone else gets $45 total

Jennifer Jacquet et al. – *Nature Climate Change*

- Game theory experiment involving inter-generational cooperation.
- The present generation bears the cost of cooperation, future generations get the benefit.
- The rewards of not cooperating are immediate, the rewards of cooperating are delayed.

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The climate change game (as described by CNN)

- This game was played with real money.
- Six participants get 40 euros each to invest in a “climate account.” Every round, these players get to pick one of three options:
- Either they put 4 euros, 2 euros, or zero money, into the account. The investments are anonymous, but the participants can see the total amount going into the pot.
- The objective: If, at the end of ten rounds, the pot of money grows to 120 euros – which is about 20 euros a person – then the team has successfully averted "dangerous climate change" and it wins the game. Each participant gets a 45 euro prize in addition to the money they each have left over. But if the pot does NOT grow big enough, the team loses the game, and they don't get the prize. This is real money, so the players have a real incentive to win.

Adding discounting and protecting the future

- The game was played with three different sets of rules.
- In the first game, the 45 euro award would be handed to the participants the next day. Seven out of 10 groups won the game.
- In the second play, the cash would be paid out seven weeks later. This time, only four of the 11 groups succeeded.
- In the third case, the prize money would go toward planting oak trees, which would sequester carbon, and thus provide the greatest benefit to future generations. In this case none of 11 groups reached the target.

Shame and Honor in the public goods game

In the original game the participants were anonymous.

In a variation of the game it was announced ahead of time that the names of the two least cooperative (most greedy) players would be exposed.

In a second variation it was announced that the names of the two most cooperative players would be exposed.

In both cases cooperation increased dramatically

(Jacquet et al. “Shame and honor drive cooperation” Biology Letters, 2011)

The Norway trust fund: The Public Goods game in real life

- Equality – Norway has been successful in developing a socio-economic system based on human needs. Consistently ranks first in the Human Development Index.
- But part of its success is based on its Global Investment Fund financed by North Sea oil revenue.
- Maximizing the rate of return on investment or maximizing the welfare of future generations?
- That fund needs the highest rate of return to insure the most money for the welfare state in the future. It is heavily invested in shale oil extraction (fracking) and Alberta tar sands projects.

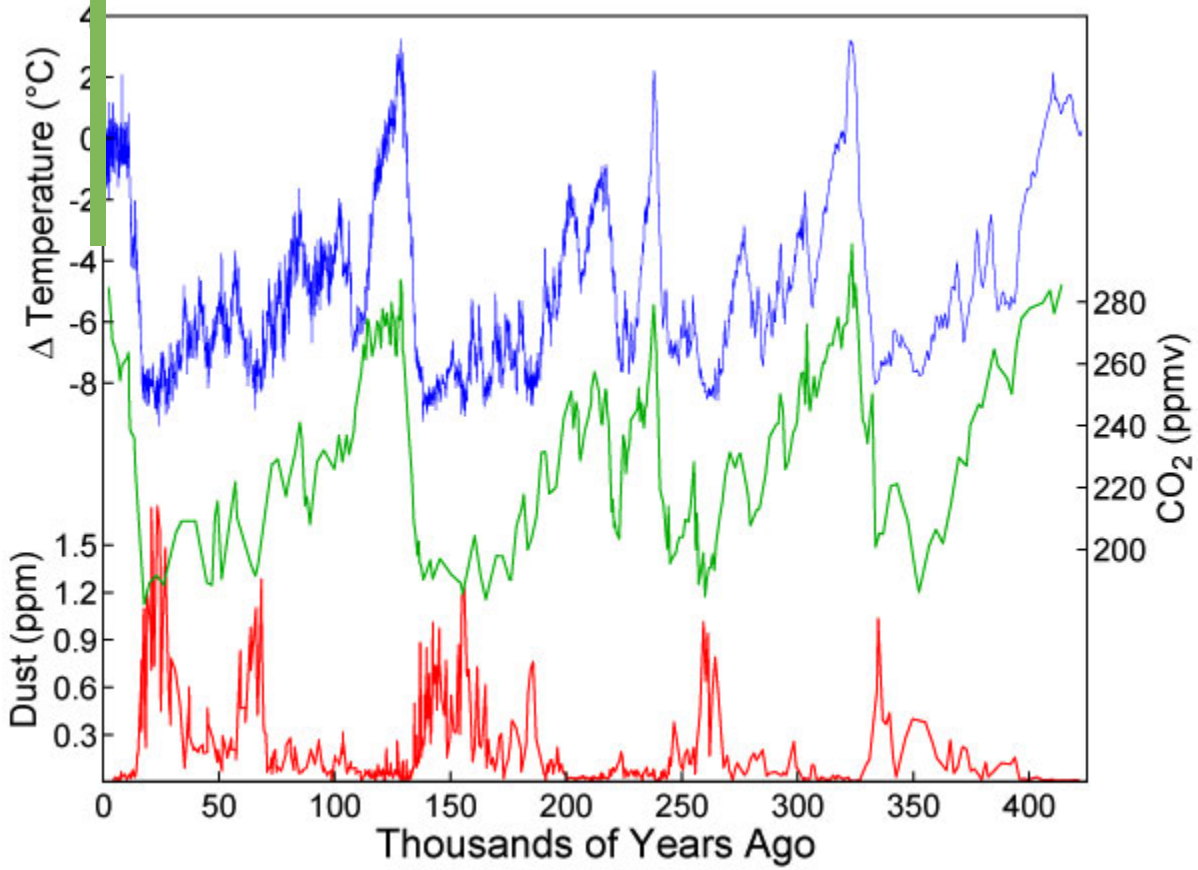
Global climate treaties as behavioral games

- Climate treaty negotiations have a lot of interesting (and sometimes depressing) angles in terms of behavioral economics.
- Most of the carbon in the atmosphere has been put there by the wealthiest industrialized economies.
- BUT within ten years, over half the atmospheric carbon will have been put there by developing countries
- Most of the damages from climate change will fall on the very poorest countries (South Asia, sub-Saharan Africa).
- Some of the richest countries, like Norway, will benefit from climate change.
- Somehow, shame, honor and fairness must be brought into play.

Research needs

- Bringing new findings about individual behavior, group behavior and global public policy into the discussion about energy efficiency and climate change mitigation.
- Much more research is needed in the following areas:
- 1. How to frame policy choices so as to maximize individual long run benefits. (Nudging individual behavior)
- 2. Achieving a better understanding of how group identify affects choices. (This is critical for the acceptance of major policy initiatives.)

2013 (400ppm)


Δ Temperature (°C)
-4
-6
-8
Dust (ppm)
1.5
1.2
0.9
0.6
0.3
280
260
240
220
200
CO_2 (ppmv)
0
50
100
150
200
250
300
350
400
Thousands of Years Ago