

ExpEcon Methods: Vernon's Precepts

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P.J. Healy

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Vernon Smith
2002 Nobel Prize

Other early pioneers: Plott, Kagel, Battalio, Williams... many

Why Vernon?

The 2002 Nobel Prize

- Vernon Smith & Charlie Plott: pioneered market experiments
 - → “experimental economics”
- Kahneman & Tversky: Prospect Theory
 - → “behavioral economics”
 - Tversky passed away in 1996
- Smith elucidated the theory of incentivized experiments
 - “Experimental Economics: Induced Value Theory” (1976)
 - “Microeconomic Systems as an Experimental Science” (1982)

Induced Value Theory (1976)

Experiments are important because

1. They are a *pretest* of economic theory

- *Prior* to the use of field data
- Using field data to modify models is flawed since it's in-sample.
“Any test of significance now becomes hopelessly confused”
 - Discuss: Do you agree?
- Model → expm'nt → new model → expm'nt → new model → ...

2. (Presumed) parallelism between lab and field

- Physics: “As far as we can tell, the same physical laws prevail everywhere.”
- Smith: “The laboratory becomes a place where real people earn real money for making real decisions about abstract claims that are just as “real” as a share of General Motors.”
 - Discuss: Do you agree?

Micro Systems as Experimental Science (1982)

The precepts of induced value theory:

1. “Non-satiation” (monotonically increasing utility)

- Monetary reward: $M(a)$ for action a
- Utility for money: $u(M)$, $u' > 0$
- $\arg \max_a u(M(a)) = \arg \max_a M(a)$
- If multiple actions (eg, $a = (x, y)$), MRS is the same:

$$\frac{\partial u(M(x, y)) / \partial x}{\partial u(M(x, y)) / \partial y} = \frac{u' \partial M / \partial x}{u' \partial M / \partial y} = \frac{\partial M / \partial x}{\partial M / \partial y}$$

- Assumes choice is costless
- Assumes selfish money maximization
 - Vernon was really just focused on market expmnts
 - Vernon is a libertarian...

The precepts of induced value theory:

2. “Saliency” (actions map to rewards)

- Action profiles a map into rewards $M(a)$
- This mapping is known and understood
- Example: If you win an auction, you earn v_i
- Example: Show-up fee is not salient
 - Warning: Not the same as Shliefer *et al.* notion of salience

The precepts of induced value theory:

3. “Dominance” (sufficiently large rewards)
 - The reward structure dominates any subjective costs or values
 - Example: Cognitive costs, effort
 - Example: Paying a commission for each transaction to offset effort costs
 - Discussion: Do we want to rule out other-regarding preferences?

The precepts of induced value theory:

4. “Privacy” (only know your own payoff)
 - Subjects can only see their own payoffs
 - Goal: own-reward maximizers
 - Removes social preferences
 - Removes “tournament incentives” (desire to come in first)
 - Discussion: social preferences?

Micro Systems as Experimental Science (1982)

The precepts of induced value theory:

5. “Parallelism” (aka “external validity”)

- Lab results apply to non-lab settings
- Not required if only testing theories in the abstract
- “the same physical laws prevail everywhere” (Harlow Shapley 1964)
- How to test parallelism? Comparison studies
- Who has the burden of proof?
- My view (following Roth):
 - Experiments provide provocative examples
 - We can’t guarantee parallelism, but our results are at least worth considering in the field

Micro Systems as Experimental Science (1982)

What else this paper does:

- Experiments as game forms $\Rightarrow$ mechanism design
 - Mount-Reiter diagram (Fig. 1)
- Classifications of experiments
 - Vary environment vs. vary institution
 - Methodological:
 1. Establishing laws of behavior
 2. Heuristic/exploratory experiments
 3. Boundary/extreme experiments
- List of “stylized facts” (robust results)