Why Should I Run Experiments?

• Discover/test motives and preferences diverging from theory
• Explore institutions too complex for theory
• Discover principles of self-organizing systems
• Wind tunnel for policy
Motives and Preferences (Kariv, et al.)

Budget line
Findings

GARP violations
Risk aversion

Predict wealth accumulation extremely accurately
Equilibrium Institutions

Acemoglu and Robinson (various) postulate that institutions and customs derive as an equilibrium of a game among citizens.

Very difficult counterfactual.

Multiple equilibria.
How Does Market Structure Evolve? (Morgan, et al.)

- Dynamics of platform competition
  - Differentiation
  - Congestion
  - First-Mover Advantage
Findings

• Market reliably tips to the better platform
• Even if worse platform has first-mover advantage
• Coexistence requires horizontal differentiation dominating vertical differentiation
Self-Organizing Institutions
(Wilson, et al.)

19th Century whaling rules:
• Baleen = Fast-fish Loose-fish
• Sperm = Iron holds the whale

How do economic differences produce institutions?
Results

- Social custom adapts to minimize transactions costs
- Whales requiring multiple hits produce iron holds the whale
- Slow, one-hit whales produce fast-fish loose-fish rules
Guiding Policy/ Market Design

- Economists have been deeply influential in designing institutions, rules, and governance
- Designs based on theory *intuition*
- Real world differs from theory in possibly important ways.
- Experiments offer a bridge
Examples

• Radio spectrum auctions:
  • Simultaneous-ascending auction
  • Known to have nice properties when values are private
• Kidney Exchange (Roth)
  • Efficient matching not strategy proof
• Irrational Exuberance
  • CAPM and APT suggest small divergence of price from fundamentals
About Xlab

• Cutting edge technology
• A lab without wires
• Mobile and flexible
• Virtual Presence
• Online experiments
• Extensive software library
• One-stop shop
• Dramatically lower the barriers to entry for scholars to “meet at the crossroads”
Bubbles

• Each of you has 3 shares of an asset plus $20 in cash to trade in a market
• Each share of the asset pays a $1 dividend at the end of every period
• However, there is a chance (1 in 6 each period) that the asset will become worthless after each period.
• Assets surviving to the end of the game pay $6 to the holder
Trade

• In each period, you are free to buy or sell shares of the asset for cash.
• We’ll use the market mechanism used in Nasdaq to conduct trade
• All trades are for cash and for assets on hand (i.e., no margins and no short positions)
Analysis

• Economic theory predicts the price at which shares should trade

• How much is a share worth in the last period:
  • Each share pays $1 dividend
  • Each share survives with probability 5/6 and pays $6
  • Therefore, a share is worth $6 in the last period
Backward Induction

• Now reason backwards from the end
• In the next to last period, how much is a share worth?
  • Each share pays a dividend of $1
  • The share survives to the next period, with probability 5/6. And we agreed that it should sell for $6 in the next period
  • Therefore a share is worth $6
The Crossroads

• Economics (and finance) predicts that shares should trade at “fundamentals” throughout the experiment.

• Psychology suggests that if there’s a perception that the asset will appreciate in the future, then buying “low” today can make sense.

• This design produces a bubble around 50% of the time,
Conclusions

- Experiments highlight the link between economic models and psychological theories of behavior and cognition
- Good logic is not the same as good *psycho*-logic
- Experiments reach beyond theory and empirical data
- Studying “Just So Stories”
- Experiments powerful market design tools
- We can “testbed” different ways of organizing the market and learn how this affects outcomes.