Econ 219B
Psychology and Economics: Applications
(Lecture 1)

Stefano DellaVigna

January 18, 2004
Outline

1. Who am I?

2. Who are you? (Prerequisites)

3. What is this course?

4. Getting started!
   Psychology and Economics by Field

5. Two Examples of Applied P&E (Good and Bad)

6. Present Bias — Status Quo Effect
1 Who am I?

Stefano DellaVigna

- Assistant Professor, Department of Economics
- Bocconi (Italy) undergraduate (Econ.), Harvard PhD (Econ.)
- Psychology and Economics, Applied Microeconomics, Behavioral Finance, Media
- Evans 515
- Oh Tu 5-6
2 Who are you?

- PhD student 2nd year and higher

- Graduate courses in
  - Econometrics
  - Micro Theory (Contract Theory, Game Theory)
  - Psychology and Economics – Theory (219A)

- Interest in
  - Psychology and Economics
  - Applied, empirical microeconomics (io, labor, public finance, finance)
3 What is this course?

- Syllabus

- Reading list:
  - photocopy of required (*) papers for students enrolled (courtesy of Judi Chan)
  - complete, updated list on course webpage

- Please email me (sdellavi@econ.berkeley.edu) for any issue with course
• Weekly homework assignment:
  
  – 8 one-page discussion reports
  
  – empirical problem set on stock response to earnings announcements or media data

• One class presentation

• Paper
• Deadlines:

1. Homework Assignments: Tuesday by noon

2. Presentations: 25 minutes

3. Paper
   (a) Meet with me about your paper by 2/18
   (b) Brief summary of your research idea by 3/17
       (2 pages, research question, data availability)
   (c) Paper due on 5/14

• Grading: 25% (5 best) written discussions, 20% problem set, 15% presentation, 40% paper
• (Free) Coffee after class

• Information sheet
4 Psychology and Economics by Field

- Protypical economist conception of human behavior (aka “Classical Model according to Matt Rabin”):

\[ \max_{l \in L} U := \sum_{t=1}^{\infty} \delta^t \sum_{s \in S_t} p(s)u(\cdot, s, t) \]

- \(L\) is set of “life-time strategies"

- \(S_t\) is set of state spaces

- \(p(s)\) are rational beliefs

- \(\delta \in (0, 1)\) is time-consistent discount factor

- \(u(\cdot, s, t)\) is true utility at time \(t\) in state \(s\)
Improving Psychological Realism:

1. Present-Biased Preferences: time inconsistency $\beta, \delta$

2. Reference Dependence: $u(\cdot, r)$ with $r$ reference point

3. Narrow Framing: maximization set $\neq L$

4. Attention (cousin of Narrow Framing)

5. Social Preferences: $u(\cdot, x)$ where $x$ represents allocation of others

6. Persuasion (cousin of social preferences)

7. Overconfidence: beliefs $\tilde{p}(s) \neq p$

8. Heterogeneity and Firm Reaction
Psychology and Economics by Field:

1. Consumer Choice:
   (a) Time preferences (health clubs, credit cards)
   (b) Reference Dependence (housing purchases)
   (c) Persuasion (advertisement)

2. Public Finance:
   (a) Time preferences (addiction, taxes, retirement savings)
   (b) Social preferences (charitable contributions)
   (c) Narrow framing (flypaper effect, incidence of taxes)
(d) (Social welfare)

3. Environmental Economics:
   (a) Narrow Framing (WTA/WTP, value of a life)

4. Labor Economics — Development Economics:
   (a) Time preferences (job search)
   (b) Social learning (choice of job, choice of crops)
   (c) Social capital (trust)
5. Industrial organization:

(a) Market Reaction

(b) Time preferences (teaser rates, mail-in rebates)

(c) Attention (complex products)

6. Political Economy:

(a) Market Reaction (manipulation of hatred or attention)

(b) Welfare Enhancement (SMT plan)
7. Asset pricing:

(a) Overconfidence (overtrading)

(b) Heterogeneity and Market Reaction (noise traders)

(c) Attention (footnotes in accounting, demographics, large events)

8. Corporate finance:

(a) Overconfidence of CEOs (investment, mergers, options)

(b) Attention (media)
5 Two Examples of Applied P&E

5.1 Michael Rashes: MCI-MCIC

5.1.1 Facts

- See handout for description of companies.

- Different companies, similar ticker name

- Do investors confuse companies with similar names?

- If investors confuse companies, correlation in trading volumes
<table>
<thead>
<tr>
<th></th>
<th><strong>MCI</strong></th>
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<tbody>
<tr>
<td>Full Name:</td>
<td>Massmutual Corporate Investors</td>
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<td>Industry:</td>
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<td></td>
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<td>2nd largest US long-distance phone company (before acquisition Worldcom)</td>
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<td>Volume</td>
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• Table III.

• What if two stocks have similar underlying fundamentals?

• Table III. Check correlation of MCI with another telephone company.

• Table III, inclusion of AT&T. (Could also include other companies)
• Go further.

• Predict returns of smaller company with bigger company (Why?)

• Which assumptions do we need to make predictions about returns?
Returns Regression:

\[ r_{MCI,t} = \alpha_0 + \alpha_1 r_{MCIC,t} + \beta X_t + \varepsilon_t \]

Table IV. Positive \( \alpha_1 \).
• Difference between reaction to positive and negative news? Returns Regression:

• Asymmetry of arbitrage

• Returns Regression:

\[ r_{MCI,t} = \alpha_0 + \alpha_1 r_{MCIC,t} + \alpha_2 r_{MCIC,t} \cdot 1(r_{MCIC,t} < 0) + \beta X_t + \epsilon_t \]

• Table IV. Negative \( \alpha_2 \). Effect of arbitrage.
• Conclusions.

• Important deviation from standard model: confusion.

• Large effect of confused investors (noise traders):
  - Volume of MCI trades triples:
    * $= 5845$ to $55045$ “additional” trades
    $*= 140\%$ to $1325\%$ above MCI mean

• Positive correlation of returns despite arbitrage

• Biases matter in the market
5.1.2 Bad economics

1. Size of the effects. Are the effects large?

• Calibrate results relative to larger firm!

• “Conspicuously well-chosen example” (aka data-mining): fraction of large-firm investors act upon small firm.
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“Top MCI Volume Days”
10,000 to 59,200 trades

= 5845 to 55045 “additional” trades (above MCI mean)

= 140% - 1325% above MCI mean

= 1.3 - 12.2 SDs above MCI mean

= 0.1% to 1.3% of MCIC mean

= 0.001 – 0.01 MCIC-SDs
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⇒ limits to arbitrage
⇒ limits to noise-trading!

Daily Return Regressions (Table IV)

- Magnitude MCIC: 0.086 (t=2.28)
- Magnitude S&P Smallcap: 0.107 (t=2.03)
- Magnitude Lehman Long Bond Index: 0.091 (t=2.28)

Why higher correlation when good news?

- Noise trader buys MCI
- Arbitrageur who owns MCI sells – unlikely
- Arbitrageur who does not own MCI tries to sell – short-selling constraints

- Noise trader who owns MCI tries to sell – realizes mistake
- Noise trader who does not own MCI tries to sell – short-selling constraints

⇒ limits to arbitrage
⇒ limits to noise-trading!
2. Are the effects significant?

- Standard errors count! (sometimes)

- Where can apply same model?
- Sometimes: eBay bidding on misspelt names
4. Overblown conclusions:

- “Small changes in sentiment affect stock prices significantly and persistently.” Neither significantly nor persistently is obvious.

- Significantly only if relative to small firm.

- Persistently: “These results are consistent with the ... evidence that abnormal returns due to investor confusion tend to be reversed within a short period of time ..”
5. Dangerous emphasis.

- Emphasize data, size of effects, explanation

- Do NOT emphasize irrationality, massive confusion, etc.

- Do NOT pick up fights!
5.1.3 Good Economics

- Neat idea, easy to remember

- Allocation of cognitive resources:
  - costs of monitoring;
  - benefits of monitoring

- Heterogeneity: Noise traders and arbitrageurs
5.2 Huberman-Regev: Cancer Cure

5.2.1 Facts

- Stock market valuation of company EntreMed (biotech)

- Effect of news

→ small jump from $11.875 to $15.25 (28%)


→ big jump from $12.063 to $ 51.81 (330%)

November 12, 1998: Wall Street Journal front page about failed replication

→ plunge to $24.875 (24%)
Figure 5: ENMD Closing Prices and Trading Volume 10/1/97-12/30/98

- November 28, 1997
- May 4, 1998
- November 12, 1998
5.2.2 Bad economics

- Case study

- Is this one observation?
5.2.3 Good economics

- Great idea: use media data.

- Wildly underappreciated source of data. Find new data sources!

- Large size of effects

- Limited attention: First order, generalizable phenomenon
6 Present Bias – Status Quo Effect

- Start from intertemporal preferences

- Three names, one object: Present bias – (quasi-)hyperbolic discounting – \((\beta, \delta)\) preferences

- Present bias + naivete’ \(\rightarrow\) status quo bias (procrastination)

- (Next lecture: calibrated model)

- Status Quo in Retirement Savings (Madrian and Shea, 2001)
• Single most important piece of field evidence on P&E

• Health Care company

• Switch of 401(k) plan features for new hires (Table 1)
• OLD Cohort hired 4/1/96-3/31/97:
  – default: no enrollment
  – 1-year wait period for eligibility

• WINDOW Cohort hired 4/1/97-3/31/98:
  – default: no enrollment
  – wait period for eligibility till 4/1/98

• NEW Cohort hired 4/1/98-3/31/99:
  – default: enrollment in 3 percent money market fund
  – immediate eligibility
• Summary Stats. Different cohorts not too different from each other (Table 3)

• Results:

1. Participation rates in 401(k) by June 30, 1999 (Figure 1 and Table 4):
   • OLD: 57%
   • WINDOW: 49%
   • NEW: 86%

2. Contribution level (Figures 2b and 2c):
   • WINDOW: 63% are at 0 percent, 4% at 3 percent
• NEW: 65% are at default (3 percent)

3. Allocation of funds in stocks (Figure 3):

• OLD: 75%
• WINDOW: 73%
• NEW: 16%

• Results equally strong with controls (Table 6)

• Results replicated in samples of other companies (Choi et al., 2002)
• Interpretation:
  
  – Status-quo

  – Power of suggestion

• Can status-quo effect be rational?

• Hard sell: large magnitudes, opportunity of social learning, persistent effect

• Present-Bias + (Partial) Naivete –> Status-quo effect

• Next lecture!