Econ 219B
Psychology and Economics: Applications (Lecture 14 and last)

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April 25, 2018
Outline

1. Behavioral Corporate Finance
2. Behavioral Labor
3. Welfare Response to Biases
4. Concluding Remarks
5. Teaching Evaluation
Section 1

Behavioral Corporate Finance
- Malmendier and Tate on mergers, cash-flow sensitivity

Version 2. Rational Managers, Behavioral Investors
- Baker, Ruback, and Wurgler (2005). Firm has to decide how to finance investment project:
  1. internal funds (cash flow/retained earnings)
  2. bonds
  3. stocks
Findings

- Fluctuation of equity prices due to noise traders
- Managers believe that the market is inefficient
  - Issue equity when stock price exceeds perceived fundamental value
  - Delay equity issue when stock price below perceived fundamental value
- Consistent with
  - Survey Evidence of 392 CFO’s (Graham and Harvey 2001): 67% say under/overvaluation is a factor in issuance decision
  - Insider trading
- Go over quickly two examples
Long-run performance of equity issuers

- Market Timing prediction: Companies issuing equity underperform later
- **Loughran-Ritter (1995)**: Compare matching samples of
  - companies doing IPOs
  - companies not doing IPOs but have similar market cap.
Similar finding with SEOs

Figure 2. The average annual raw returns for 4,753 initial public offerings (IPOs), and their matching nonissuing firms (top), and the average annual raw returns for 3,702 seasoned equity offerings (SEO), and their matching nonissuing firms (bottom), during the five years after the issue. The equity issues are from 1970 to 1990. Using the first closing postissue market price, the equally weighted average buy-and-hold return for the year after the issue is calculated for the issuing firms and for their matching firms (firms with the same market capitalization that have not issued equity during the prior five years). On each anniversary of the issue date, the equally weighted average buy-and-hold return during the next year for all of the surviving issuers and their matching firms is calculated. For matching firms that get delisted (or issue equity) while the issuer is still trading, the proceeds from the sale on the delisting date are reinvested in a new matching firm for the remainder of that year (or until the issuer is delisted). The numbers graphed above are reported in Table III.
Section 2

Behavioral Labor
Summary

- Behavioral labor economics:
  1. Job Search (present bias/reference dependence/overconfidence)
  2. Effort at workplace (pay equity/gift exchange)
  3. Wage setting (pay equity/gift exchange/wage rigidity)
  4. Labor supply (reference dependence)
  5. Educational choices (present bias/inattention/social norms)

- Today: Nominal Wage Rigidity
Kahneman, Knetsch and Thaler (1986)

- Telephone surveys in Canada in 1984 and 1985 → Ask questions on fairness
  - Question 4A. A company is making a small profit. It is located in a community experiencing a recession with substantial unemployment but no inflation. There are many workers anxious to work at the company. The company decides to decrease wages and salaries 7% this year.
    
    \( (N = 125) \) Acceptable 38% Unfair 62%

  - Question 4B. …with substantial unemployment and inflation of 12%…The company decides to increase salaries only 5% this year.
    
    \( (N = 129) \) Acceptable 78% Unfair 22%

- A real and nominal wage cut is not fair (Question 4A)
- A real (but not nominal) wage cut is fair (Question 4B)

- If this is true, expect employers to minimize cases of
  
  \[ w_t - w_{t-1} < 0 \]
Card and Hyslop (1997)

- Examine discontinuity around 0 of nominal wage changes
- Prediction of theory:
Data and Methodology

Data sources:
- 1979-1993 CPS.
  - Rolling 2-year panel
  - Restrict to paid by the hour and to same 2-digit industry in the two years
  - Restrict to non-minimum wage workers
- PSID 4-year panels 1976-79 and 1985-88

Use Log Wage changes: $\log w_t - \log w_{t-1}$

Issue with measurement error and heaping at $\log w_t - \log w_{t-1} = 0$

Construct counterfactual density of LogWage changes
  - Assume symmetry
  - Positive log wage changes would not be affected
Methodology

- Plots using kernel estimates of density (local smoother)
- Compare the actual distribution and the predicted one
- Evidence from the CPS year-by-year
- Problem more severe in years with lower inflation

- Large effect of nominal rigidities
- Effect on firings?
Real Wage Changes, 1979-80 to 1982-83
Real Wage Changes, 1983-84 to 1986-87
Real Wage Changes, 1987-88 to 1998-91

- Administrative data from several firms
  - Base pay % increase among those employed in 2003 and 2004
  - 58 (0.34%) cuts, 1,964 (10.18%) freezes, 15,091 (88.18%) raises
2007 & 2008

- Base pay % increase among those employed in 2007 and 2008
- 46 (0.36%) pay cuts, 6,913 (54.58%) pay freezes, 5,707 (45.06%) pay raises
Conclusions

- Card and Hyslop had *underestimated* the degree of nominal rigidity

- Important implications for labor markets when low inflation
  - If no pay cut, what margin of adjustment?
  - Firing?
  - Less hiring?

- Key under-researched topic in behavioral macro
Section 3

Welfare Response to Biases
Government Intervention

- Room for government/social planner intervention?
  - No if:
    - Sophistication about biases
    - Markets to correct biases exist
  - No if:
    - Naivete’ of agents
    - Missing markets
    - Example: sin taxes on goods

- Government intervention does not need to be heavy-handed:
  - Require active decision
  - Change default
Benartzi and Thaler (2004)

- First behavioral paper in JPE since 1991!

- Setting:
  - Midsize manufacturing company
  - 1998 onward
  - Company constrained by anti-discrimination rules → Interested in increasing savings

- Features of SMT 401(k) plan:
  - No current increase in contribution rate
  - Increase in contribution rate by 3% per future pay increase
  - Can quit plan at any time
Biases targeted:

1. Self-control
   - Desire to Save more
   - Demand for commitment

2. Partial naivete’
   - Partial Sophistication $\rightarrow$ Demand of commitment
   - Partial Naïveté $\rightarrow$ Procrastination in quitting plan

3. Loss Aversion with respect to nominal wage cuts
   - Hate nominal wage cuts
   - Accept real wage cuts
Solutions and Implementation

- **Solutions:**
  1. Increase savings in the future (not in present)
  2. Set default so that procrastination leads to **more** (not less) savings
  3. Schedule increase only at time of pay raise

- **Implementation:**

<table>
<thead>
<tr>
<th>TABLE 1</th>
<th>Participation Data for the First Implementation of SMarT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of plan participants prior to the adoption of the SMarT plan</td>
</tr>
<tr>
<td></td>
<td>Number of plan participants who elected to receive a recommendation from the consultant</td>
</tr>
<tr>
<td></td>
<td>Number of plan participants who implemented the consultant’s recommended saving rate</td>
</tr>
<tr>
<td></td>
<td>Number of plan participants who were offered the SMarT plan as an alternative</td>
</tr>
<tr>
<td></td>
<td>Number of plan participants who accepted the SMarT plan</td>
</tr>
<tr>
<td></td>
<td>Number of plan participants who opted out of the SMarT plan between the first and second pay raises</td>
</tr>
<tr>
<td></td>
<td>Number of plan participants who opted out of the SMarT plan between the second and third pay raises</td>
</tr>
<tr>
<td></td>
<td>Number of plan participants who opted out of the SMarT plan between the third and fourth pay raises</td>
</tr>
<tr>
<td></td>
<td>Overall participation rate prior to the advice</td>
</tr>
<tr>
<td></td>
<td>Overall participation rate shortly after the advice</td>
</tr>
</tbody>
</table>
Results

- Result 1: High demand for commitment device
- Result 2: Phenomenal effects on savings rates

<table>
<thead>
<tr>
<th>TABLE 2</th>
<th>AVERAGE SAVING RATES (%) FOR THE FIRST IMPLEMENTATION OF SMaRT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Participants Who Did Not Contact the Financial Consultant</td>
</tr>
<tr>
<td>Participants initially choosing each option*</td>
<td>29</td>
</tr>
<tr>
<td>Pre-advice</td>
<td>6.6</td>
</tr>
<tr>
<td>First pay raise</td>
<td>6.5</td>
</tr>
<tr>
<td>Second pay raise</td>
<td>6.8</td>
</tr>
<tr>
<td>Third pay raise</td>
<td>6.6</td>
</tr>
<tr>
<td>Fourth pay raise</td>
<td>6.2</td>
</tr>
</tbody>
</table>

* There is attrition from each group over time. The number of employees who remain by the time of the fourth pay raise is 229.
Second Implementation

- Simple letter sent, no seminar / additional information + 2% increase per year
- Lower take-up rate (as expected), equally high savings increase

<table>
<thead>
<tr>
<th>TABLE 3</th>
<th>AVERAGE SAVING RATES FOR ISPAT INLAND (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EMPLOYEES WHO WERE ALREADY SAVING ON MAY 31, 2001</td>
</tr>
<tr>
<td></td>
<td>JOINED SMarT (N=615)</td>
</tr>
<tr>
<td>Pre-SMarT (May 2001)</td>
<td>7.62</td>
</tr>
<tr>
<td>First pay raise (October 2001)</td>
<td>9.38</td>
</tr>
</tbody>
</table>

Note.—The sample includes 5,817 employees who are eligible to participate in the 401(k) plan and have remained with the company from May 2001 through October 2001. The sample includes 414 employees who were already saving at the maximum rate of 18 percent, although they were not allowed to join the SMarT program. The reported saving rates represent the equally weighted average of the individual saving rates.
Third Implementation

- With Randomization:
  - Division A: Invitation to attend an informational seminar (40% do)
  - Division O: ‘Required’ to attend information seminar (60% do)
  - 2 Control Divisions

- Two differences in design:
  - Increase in Savings take place on April 1 whether pay increase or not (April 1 is usual date for pay increase)
  - Choice of increase in contr. rate (1%, 2%, or 3%) (Default is 2%)
  - Increases capped at 10%

- Results: Sizeable demand for commitment, and large effects on savings + Some spill-over effects
### TABLE 4
**Average Saving Rates (%) for Philips Electronics**

<table>
<thead>
<tr>
<th>DATE</th>
<th>Employees Who Were Already Saving in December 2001</th>
<th>Employees Who Were Not Saving in December 2001</th>
<th>All Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Joined SMarT</td>
<td>Did Not Join SMarT</td>
<td>Joined SMarT</td>
</tr>
<tr>
<td>Observations</td>
<td>7,405</td>
<td>7,053</td>
<td>14,458</td>
</tr>
<tr>
<td>Pre-SMarT (December 2001)</td>
<td>5.65</td>
<td>.00</td>
<td>2.90</td>
</tr>
<tr>
<td>Post-SMarT (March 2002)</td>
<td>5.76</td>
<td>.70</td>
<td>3.20</td>
</tr>
<tr>
<td><strong>A. Control Group</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>180</td>
<td>339</td>
<td>36</td>
</tr>
<tr>
<td>Pre-SMarT (December 2001)</td>
<td>5.26</td>
<td>5.38</td>
<td>.00</td>
</tr>
<tr>
<td>Post-SMarT (March 2002)</td>
<td>6.83</td>
<td>5.72</td>
<td>5.03</td>
</tr>
<tr>
<td><strong>B. Test Group (Divisions A and O Combined)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>66</td>
<td>190</td>
<td>10</td>
</tr>
<tr>
<td>Pre-SMarT (December 2001)</td>
<td>5.47</td>
<td>5.48</td>
<td>.00</td>
</tr>
<tr>
<td>Post-SMarT (March 2002)</td>
<td>7.32</td>
<td>5.97</td>
<td>6.80</td>
</tr>
<tr>
<td><strong>C. Division A</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>114</td>
<td>149</td>
<td>26</td>
</tr>
<tr>
<td>Pre-SMarT (December 2001)</td>
<td>5.14</td>
<td>5.25</td>
<td>.00</td>
</tr>
<tr>
<td>Post-SMarT (March 2002)</td>
<td>6.55</td>
<td>5.41</td>
<td>4.35</td>
</tr>
<tr>
<td><strong>D. Division O</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** The “test” group consists of individuals at Divisions A and O.
Issues

- **Saving too much?** Ask people if they would like to quit their plan.

<table>
<thead>
<tr>
<th>TABLE 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEDIAN INCOME REPLACEMENT RATIOS (%)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>INCOME</td>
</tr>
<tr>
<td>$25,000</td>
</tr>
<tr>
<td>$50,000</td>
</tr>
<tr>
<td>$75,000</td>
</tr>
<tr>
<td>A. Pre-SMarT</td>
</tr>
<tr>
<td>B. Post-SMarT</td>
</tr>
</tbody>
</table>

- General equilibrium effect of increase in savings on returns
- Why didn’t a company offer it? How about teaching people?
Leverage biases to help biased agents
Do not hurt unbiased agents (cautious paternalism)

SMartT Plan is great example:
- From Design of an economist...
- ...to Research Implementation with Natural Experiment and Field Experiment
- ...to Policy Implementation into Law passed in Congress: *Automatic Savings and Pension Protection Act*
However...

SMRT may be a unique example for several reasons:

- Defaults are hard to leverage in many situations
  - How to get people to exercise more?
  - Eat less?
  - Pay more attention to hidden information?

- Saving more is desirable for almost all
  - Interventions on other fronts are more open to criticism

- Company was open to SMRT: Firm happy to increase savings of employees
  - Often firm would often rather exploit biases than counter-act them
  - Example 1: Neglect of mutual fund fees
  - Example 2: Overconfidence in trading
Nudge Agenda

More generally, Nudge agenda (Sunstein and Thaler, 2011)

- Use behavioral interventions
- Induce a given behavior

Great promise beyond savings:

- **Energy**: Display energy consumption of neighbors to lower energy use (OPower)
- **Organ donation**: Require active choice at DMV
- **Taxes**: Reminder letters with deadlines to increase tax compliance
- ...
Potential Problems

- Problem 1. Are we nudging *for good*?
  - Nudges could be used to pursue sinister objectives
  - (In fact, companies have used them for decades to increase sales)
  - Even when well intended, do we know that it is good to induce a given behavior?
    - Savings: What is the right savings rate?
    - Charitable giving: Does it raise welfare? (earlier lecture)
Potential Problems

- Problem 2. (Related) What is the model?
  - A model helps assess the channels
  - Also, gives idea on welfare implications
  - SMRT: Very clear channel
  - Other interventions: not always clear

- Despite these difficulties, there are now numerous attempts in this direction
Recent Examples

- **Loewenstein and Volpp**’s work on health outcomes
  - Series of Randomized Trials
  - Leverage incentives with lotteries (probability weighting)
  - Use team incentives...
  - Outcomes: Weight loss, exercise, remembering to take pill,...

- **Bhargava and Manoli (AER 2016)**: ETIC take-up
MOTIVATION & BACKGROUND

• **EITC is largest means-tested cash transfer program.** It disburses $58 billion per year to 26 million recipients through income supplement that encourages work

• Fully refundable, supplements earned income by average of 17% which amounts to $2,100. Must file your taxes to claim

• **25% of eligible do not take-up (~6.7m).** Of 25%, 16% do not file taxes, and 9% files taxes (~2.3 m) (Plueger 2010). 9% is focus of this study

• (Many) filing non-claimants receive a reminder notice / claiming worksheet (CP 09 or CP 27) from IRS

• **Policy consequences profound.** Foregone benefits amount to average of 31 days of income, up to ~115 days for some (est. $1,096 benefit, $8,900 income). Health, education, consumption benefits linked to EITC (Hoynes 2011; Dahl and Lochner 2011; Smeeding and Phillips and O’Connor 2001)

• Despite considerable research, incomplete take-up in benefit programs regarded as puzzle to economists (Currie 2006)
EITC BENEFIT SCHEDULE FOR TAX YEAR 2009
RESEARCH STRATEGY

Field experiment to test leading causes of low take-up

• Modify tax documents (notice + worksheet + envelope) and distribute to eligible filing non-claimants

• Simultaneously test three hypotheses regarding role of information (benefits, costs, program rules), Informational complexity, and program stigma on response

• Randomize three components independently and distribute in blocks defined by zip code and dependent status

Tax-return data plus micro-data on demographics, EIC claiming history

Survey of perceived incentives. Surveys of ~1200 low to moderate income taxpayers to assess perception of EITC cost/benefit parameters

Psychometric scoring of interventions. Second survey with ~2800 subjects illuminates psychological mechanisms underlying experimental response
AWARENESS AND CONSTRUAL OF INCENTIVES

- 1200 surveys administered across volunteer tax centers in Chicago (1050) and SF (150) in early 2011
- Administered during period when people wait for tax assistance
- Survey elicits (1) tax and demographic information (permits calculation of benefits/eligibility), (2) perceptions of cost and benefit parameters
- Perceived incentives matter (Liebman and Luttman 2011; Chetty and Saez 2009)
- Limits to survey (second survey of 2,800 on Amazon MechTurk)
SURVEY SAYS…

Many are filers are not aware of EITC

- 46% of filers not aware of program (45% of eligible)
- 15% do not regularly open mail from IRS

Perceptions of benefits are inaccurate

- 45% of filers had wrong beliefs of eligibility
- 33% believe they are ineligible, but they are
- 43% of filers underestimate benefits (by 68% on average)

Perceptions of worksheet claiming time are reasonable

- 5% believe worksheet will take > 1 hr, or have WTP > $100

Filers vastly overestimate audit rate

- Median: 15%, Mean: 25%, Actual: 1.1% (EITC: ~1.8%),
- 75% of filers believe audit rate at least 5x actual
EXPERIMENT CONTEXT – ILLUSTRATIVE TIMELINE

2009
- Jan to Dec: Earn income, qualify for EITC, (CA only)

2010
- Feb: File TY 2009 taxes, neglect to claim EITC
- March: IRS reminds you to claim with CP09/27 notice
- May: For 41% who return CP, IRS mails check

Nov: Experimental notices mailed to CP non-respondents (CA)
## Table 3

**EXPERIMENTAL INTERVENTIONS BY MECHANISM**

<table>
<thead>
<tr>
<th>MECHANISM</th>
<th>INTERVENTION</th>
<th>DESCRIPTION</th>
<th>SAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Informational Complexity</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Simplicity / Complexity (Design)</td>
<td>1. Simple Notice</td>
<td>Relative to complex (original CP) notice, &quot;simple&quot; single-sided notice has</td>
<td>3,676</td>
</tr>
<tr>
<td></td>
<td></td>
<td>simplified layout and excludes eligibility information repeated in worksheet</td>
<td></td>
</tr>
<tr>
<td>Simplicity / Complexity (Length)</td>
<td>2. Simple Worksheet</td>
<td>Relative to simple worksheet, a complex worksheet includes additional,</td>
<td>10,979</td>
</tr>
<tr>
<td></td>
<td></td>
<td>non-discriminatory, questions regarding eligibility</td>
<td></td>
</tr>
<tr>
<td><strong>Program Information</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefit and Cost Information</td>
<td>1. Benefits (Low and High)</td>
<td>Simple notice reports upper bounds of benefit range</td>
<td>6,761</td>
</tr>
<tr>
<td></td>
<td>2. Transaction Costs (Low and High)</td>
<td>Simple notice provides guidance as to worksheet completion time</td>
<td>3,475</td>
</tr>
<tr>
<td>Penalty/Audit Information</td>
<td>1. Indemnity Message</td>
<td>Worksheet with message to indemnify against penalty for unintentional error</td>
<td>17,027</td>
</tr>
<tr>
<td>General Program Information</td>
<td>1. Attention Envelope</td>
<td>Envelope with message indicating enclosed information is &quot;good news&quot;</td>
<td>17,044</td>
</tr>
<tr>
<td></td>
<td>2. Informational Flyer</td>
<td>One page flyer offers program information and trapezoidal benefit schedule</td>
<td>4,019</td>
</tr>
<tr>
<td><strong>Program Stigma</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal Stigma</td>
<td>1. Emphasis on Earned Income</td>
<td>Simple notice emphasizes that benefit is reward for hard work</td>
<td>1,844</td>
</tr>
<tr>
<td>Social Stigma</td>
<td>2. Social Influence</td>
<td>Simple notice communicates that similarly situated peers are also claiming</td>
<td>1,753</td>
</tr>
</tbody>
</table>
(A) INFORMATIONAL COMPLEXITY

THEORY

- Poor financial choices due to lack of experience and familiarity with complex documents or low “financial literacy”

- Transfer programs are complicated. EITC has 24 pages of instruction in tax book, 56 pages in separate Publication 596; average length of state FSP application is 12 pages (Bertrand and Mullainathan and Shafir 2006)

- Simplification appears to “improve” choice in many contexts (e.g., Bettinger et al. 2009)

INTERVENTIONS

(1) **Complex Notice**: Tests “design complexity”. Features textually dense design, is two pages, and repeats eligibility information from worksheet. Resembles original CP Notice.

(2) **Complex Worksheet**: Tests “length complexity”. Features additional, “non discriminatory” questions.
COMPLICATED NOTICE (ADAPTÉ FROM CP)

Summary of the notice and program

Instructions for eligibility worksheet; very exclusionary language

Headline describing purpose of notice

Details of dependent eligibility, next steps, and instructions for further information
“BASELINE” NOTICE

- Headline communicates program eligibility.

- Summary explains purpose of letter and program. Tax Year is specified.

- Recipients instructed to complete worksheet to determine eligibility; eligibility criteria not repeated on notice.

- Information on Notice + Worksheet held constant.
SIMPLE WORKSHEET

• Guides reader through determination of eligibility (distinct version for dependent and non-dependents)

• Worksheet checks valid SSN, elicits names of eligible dependents, and instructs recipient to sign and return if eligible

• Original CP worksheet, with alternative formatting and organization, not tested
COMPLEX WORKSHEET

- Same formatting and organization as simple worksheet
- Lengthier than simple worksheet due to additional eligibility criteria questions taken from IRS Pub 596 (in Step 1 for dependents version, and in Step 1 and 2 for non-dependents version)
- Example: “I was not a U.S. citizen (or resident alien) for any part of 2009
- Additional criteria do not have bearing on true eligibility as per administrative records
(B) INFORMATION ON BENEFITS, COSTS, RULES

THEORY

- Individuals optimize with respect to incentives
- Individuals have limited attention, may only respond to perceived or known incentives (Kahneman 1986; Taylor and Fiske 1975)
- Basic information regarding incentives helps optimize behavior (e.g., Liebman and Luttmer 2011)

INTERVENTIONS

1. **Benefit Notice:** Generic benefit information (high and low)
2. **Cost Notice:** Information on worksheet claiming time (high and low)
3. **Penalty Worksheet:** “Indemnification” message on claiming worksheet
4. **Informational Flyer:** Information on benefits and program on 1 page flyer
5. **Messaged Envelope:** Persuasion message on envelope
BENEFIT DISPLAY

• Identical to baseline notice in design and content except…

• Headline communicates refund may be up to specific amount determined by number of dependents [IRS did not allow exact benefit amounts]

• Indicated range is $457 for those with no dependents, $5,657 for those with 3 or more dependents, and randomized to be either dependent specific, or overall, maximum for 1 dependent ($3,043), and 2 dependents ($5,028)

• Summary reiterates benefit information
COST DISPLAY

• Identical to baseline notice in design and content except...

• Headline communicates that completing worksheet should take less than 60 (or 10) minutes
INFORMATIONAL FLYER

- One page sheet containing incentive information through a graphical display, and text clarifying confusing aspects of eligibility and requirements.

- Graphics generally complicated to digest for those of low financial literacy.

- Flyer accompanies select baseline notices.
Messaged Envelopes

- Treatment envelopes communicate that contents contain beneficial and important information.
- Mail marketing firms estimate that up to 44% of non-personal mail is not opened.
- Our surveys indicate that 16% of low to moderate income filers do not open mail from IRS.
THEORY

- Stigma may deter participation in means-tested benefit programs (e.g., Weisbrod 1970; Moffit 1983; Currie 2006)
- Stigma due to either social sanction (social) or threat to identity (personal)
- Encourage behavior through social influence (Cialdini et al. 1990)
- Energy use and peer feedback (Costa and Kahn 2010)

INTERVENTIONS

“You may be eligible for a refund. Usually, 4 of every 5 eligible people claim their refunds.”
Notice Headline for Intervention 1

“You may be eligible for a refund due to all your hard work.”
Notice Headline for Intervention 2
RANDOMIZATION

- Notice, worksheets, envelopes independently randomized
- Randomization by blocks defined by zip code and dependent indicator (3,148 blocks)
- Oversampling – Baseline notices 4x sample; salience, 3x sample; complex worksheet, .5x sample
- Balancing checks suggest randomization successful
- Mailed mid November 2010; data collected through May 2011
WHAT IS THE COUNTERFACTUAL RESPONSE?

CA Notice Response since July 2010
(IRS Processing Date)

Experimental Notices Mailed
(mid-November 2010)

Pre-Period Response to CP Notices
(since approx July 2010)
**SUMMARY OF OVERALL RESPONSE**

- Mere receipt of second notice yields 0.22 response (0.14 control condition)
- Language may be a barrier to response
- Simplification raises response from .14 to .23; Information from .23 to .28; No beneficial effect of lower stigma
- Effects not driven by denial of claims rate

---

**SUMMARY OF RESPONSE FOR INITIAL & EXPERIMENTAL NOTICE**

<table>
<thead>
<tr>
<th></th>
<th>ALL SAMPLE</th>
<th>W/O DEPENDENTS</th>
<th>W/ DEPENDENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Response</td>
<td>Benefit Size</td>
<td>Deny</td>
</tr>
<tr>
<td>CP First Notice (CA TY 2009)</td>
<td>0.41</td>
<td>$570</td>
<td>0.02</td>
</tr>
<tr>
<td>Overall Response</td>
<td>0.22</td>
<td>$511</td>
<td>0.01</td>
</tr>
<tr>
<td>Overall Response - Hispanic Adjusted</td>
<td>0.25</td>
<td>$530</td>
<td>0.01</td>
</tr>
<tr>
<td>Control (Complex N + Complex WS)</td>
<td>0.14</td>
<td>$546</td>
<td>0.01</td>
</tr>
<tr>
<td>Simple (Simple N + Simple WS)</td>
<td>0.23</td>
<td>$514</td>
<td>0.01</td>
</tr>
<tr>
<td>Simple + Information</td>
<td>0.28</td>
<td>$531</td>
<td>0.01</td>
</tr>
<tr>
<td>Simple + Low Stigma</td>
<td>0.22</td>
<td>$452</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Notes: This table summarizes the response rate, non-zero benefit size, and denial rate for various experimental samples of interest. The adjustment for the Spanish speaking population is estimated by a response model using 2007 zip code level data on the density of the hispanic population. Please see Appendix for details. The dependent specific response data is not available for the first CP notice.

- Mere receipt of second notice yields 0.22 response (0.14 control condition)
- Language may be a barrier to response
- Simplification raises response from .14 to .23; Information from .23 to .28; No beneficial effect of lower stigma
- Effects not driven by denial of claims rate
## Response and Denial by Experimental Treatments

### DEPENDENT VARIABLE - (PROBIT)

<table>
<thead>
<tr>
<th>Complexity Interventions</th>
<th>Baseline</th>
<th>w/ Controls</th>
<th>w/o Deps</th>
<th>w/ Deps</th>
<th>Baseline</th>
<th>w/ Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex Notice</td>
<td>-0.06***</td>
<td>(0.008)</td>
<td>[-49%]</td>
<td>[-60%]</td>
<td>0.0001</td>
<td>0.0000</td>
</tr>
<tr>
<td>Complex Worksheet</td>
<td>-0.04***</td>
<td>(0.005)</td>
<td>[-29%]</td>
<td>[-32%]</td>
<td>0.0001</td>
<td>0.0000</td>
</tr>
<tr>
<td>Informational Interventions</td>
<td>0.08***</td>
<td>(0.007)</td>
<td>[+37%]</td>
<td>[+41%]</td>
<td>0.0003*</td>
<td>0.0003*</td>
</tr>
<tr>
<td>Claiming Cost Display</td>
<td>-0.014</td>
<td>(0.009)</td>
<td>[-6%]</td>
<td>[-5%]</td>
<td>0.0002</td>
<td>0.0003</td>
</tr>
<tr>
<td>Indemnity from Penalty Worksheet</td>
<td>0.005</td>
<td>(0.005)</td>
<td>[+2%]</td>
<td>[+4%]</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
<tr>
<td>Informational Flyer</td>
<td>-0.04***</td>
<td>(0.008)</td>
<td>[-17%]</td>
<td>[-12%]</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
<tr>
<td>Envelope Message</td>
<td>-0.007</td>
<td>(0.005)</td>
<td>[-3%]</td>
<td>[-15%]</td>
<td>0.0000</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

### Stigma Interventions

| Personal Stigma Reduction                                   | -0.007   | (0.011)     | [-3%]    | [-4%]   | 0.0003   | 0.0004      |
| Social Stigma Reduction                                     | -0.04*** | (0.010)     | [-21%]   | [-23%]  | 0.0000   | 0.0000      |

**Fixed Effects:**
- X (Dep) Controls
- X

**N:**
- 35,050
- 35,050
- 23,618
- 11,432
- 35,050
- 35,050

**Pseudo R-Squared:**
- 0.02
- 0.03
- 0.01
- 0.17
- 0.10

**Baseline Response Rate (Simple N + V):**
- 0.23
- 0.23
- 0.27
- 0.16

**Control Response Rate (Complex N + V):**
- 0.14
- 0.14
- 0.17
- 0.10

**P-value of F-Test:**
- Complexity Intervene: 0.00
- Informational Intervene: 0.28
- Stigma Intervene: 0.00
Predicted Response for Benefit and Cost Notices

- Benefit Display (w/o dependents):
  - Baseline $457: 27%
  - Baseline $3043: 16%
  - Baseline $5028: +5%
  - Baseline $5657: +6%

- Benefit Display (w/ dependents):
  - Baseline $457: +9%
  - Baseline $3043: +13%

- Cost Display:
  - Baseline 60mn: 23%
  - Baseline 10mn: -1%
  - Baseline 10mn: -2%
Section 4

Concluding Remarks
How to complete a dissertation and be (approximately) happy

1. Know yourself, and put yourself to work
   - What gets you going and excited?
   - What instead stops your progress / makes you procrastinate?
     - Are you afraid of undirected research?
     - Not enough intuition?
     - Not enough technicality?
   - We differ in our gifts:
     - Intuition and creative ideas
     - Ability to organize material
     - Technical ability
   - Work in teams with someone who complements you
Economics is about techniques AND about ideas

- **Rule 1. Study the techniques**
  - Everyone needs a knowledge of:
    - Modelling skills (decisions, game theory, contracts, behavioral models)
    - Econometrics (asymptotics, applied metrics)
    - (At least) one field (methodology, questions, previous research)
Economics is about techniques AND about ideas

Rule 2. Think of interesting ideas

- Start from new idea, not from previous papers. Ex.: Mas-Moretti on Safeway data
- Think of an idea that can fix a broken literature (Levitt). Ex.: Fehr-Goette on cab drivers
- Connect two literatures which were unconnected. Ex.: Eisensee-Stromberg on political economy + behavioral

Rule 3. Explore technique you need for idea

- Ideas often come first
- It will be much easier to learn technique once you have an interesting problem at hand
What are good ideas?

- 1% of GDP (Glaeser)
- New questions (better) or unknown answers
- Questions you care about and topics you know about (comparative advantage: List)
- Socially important topics (Akerlof)
- Good research is always useful, even if not policy-relevant
Look for occasions to learn:
- Attend seminars (including student lunch talks)
- Attend job market talks
- Read literature, but critically: What is missing? Where could I apply this idea?
- Discuss ideas with peers, over lunch, with yourself
- Get started on some data set
- Be curious
It is OK to go on the job market as a behavioral student

- Yes, demand for behavioral students is still relatively limited
- BUT supply is even more limited: mainly Berkeley, Harvard + some Cornell, CalTech, CMU
- Many students with (quasi-)behavioral paper on the market show lack of behavioral training (eg, development papers with experiments in tow)
- Show off your training!
Above all, do not get discouraged...
- Unproductive periods are a fact of life
- Ideas keep getting better (and economics more fun) with exercise
- Work hard
- Keep up the exercise!