

# Econ 219B

## Psychology and Economics: Applications (Lecture 14 and last)

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# Outline

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

## Section 1

# Behavioral Corporate Finance

# Behavioral Corporate Finance

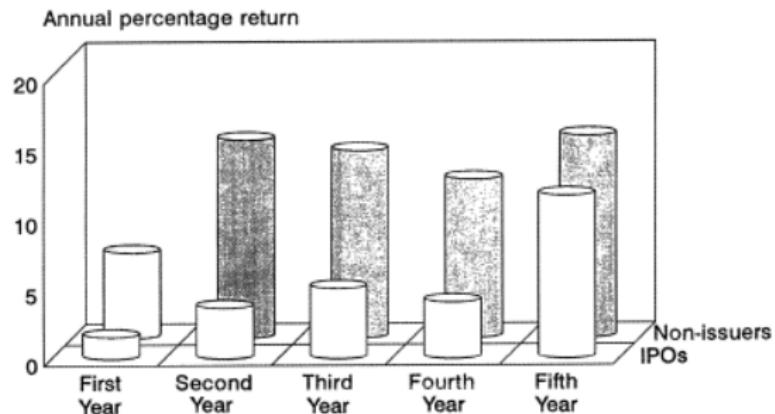
- **Version 1. Behavioral Managers, Rational Investor**
  - Malmendier and Tate on mergers, cash-flow sensitivity
- **Version 2. Rational Managers, Behavioral Investors**
- **Baker, Ruback, and Wurgler (2005).** Firm has to decide how to finance investment project:
  - ① internal funds (cash flow/retained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

# Findings

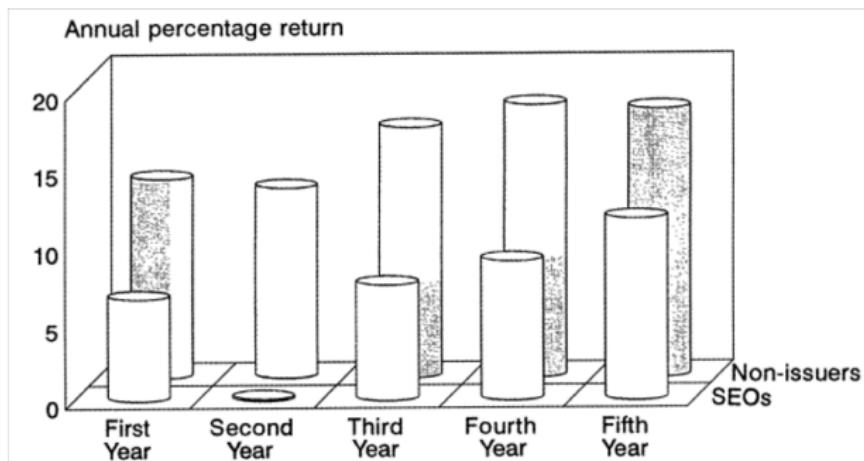
- Fluctuation of equity prices due to noise traders
- Managers believe that the market is inefficient
  - Issue equity when stock price exceeds perceived fundamental value
  - Delay equity issue when stock price below perceived fundamental value
- Consistent with
  - Survey Evidence of 392 CFO's (Graham 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%

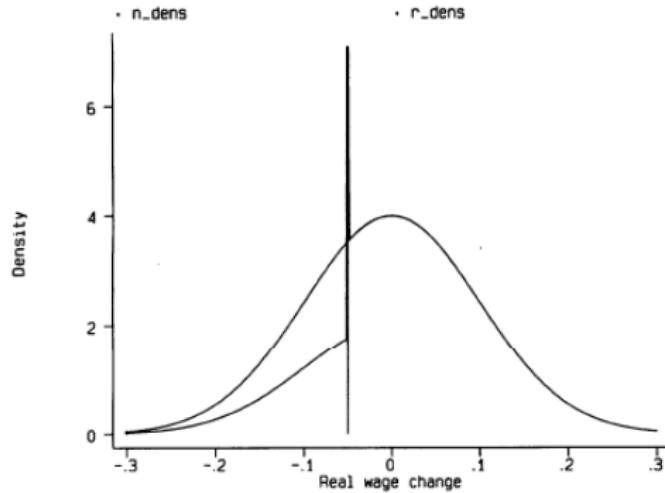
Question 4B. ...with substantial unemployment and inflation of 12%...The company decides to increase salaries only 5% this year.

( $N = 129$ ) 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:



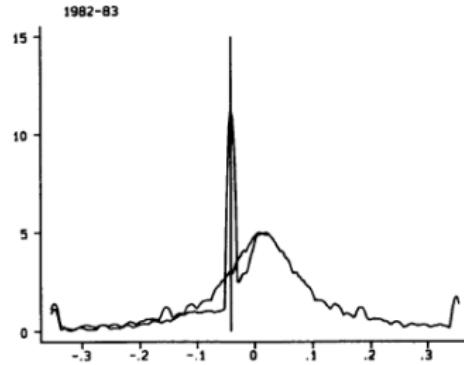
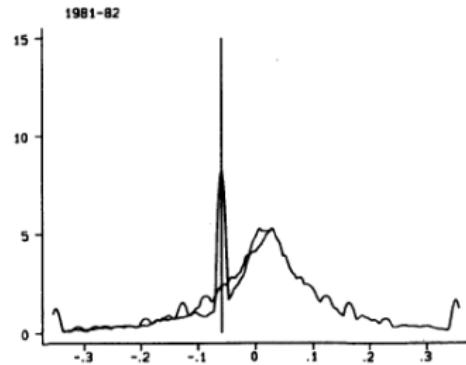
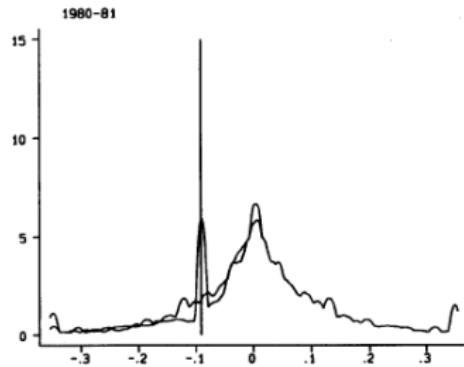
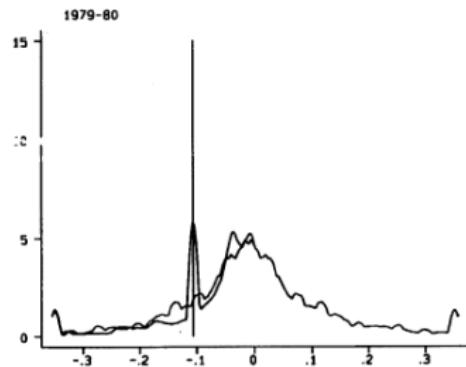
# Data and Methodology

- 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

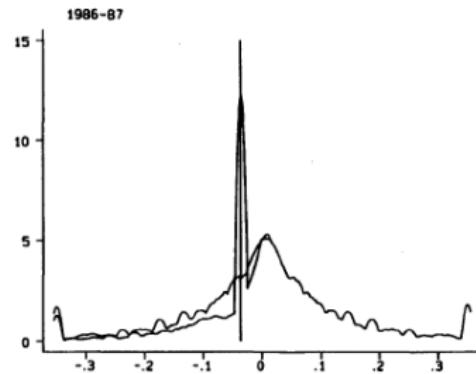
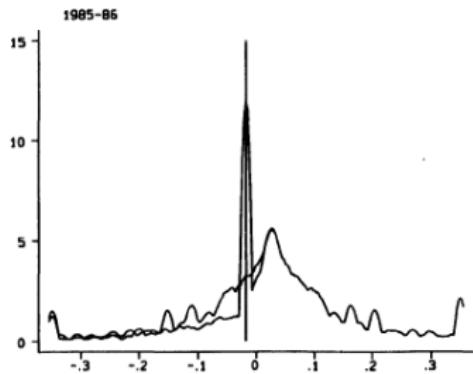
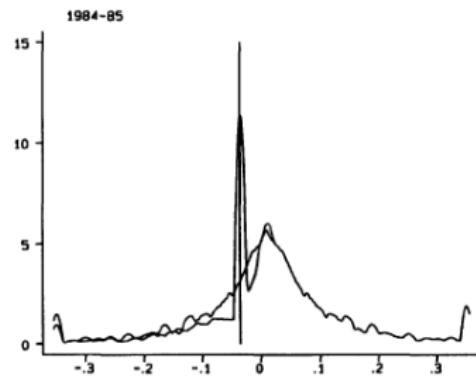
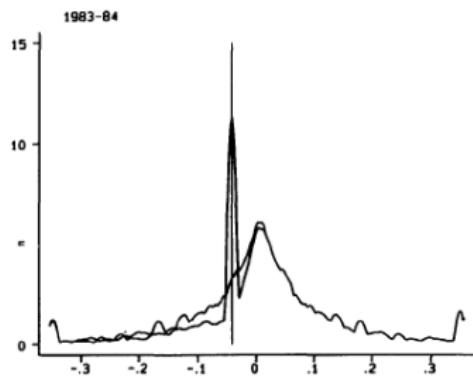
# Methodology

- 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?

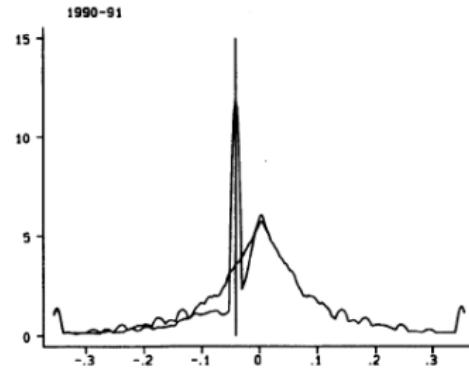
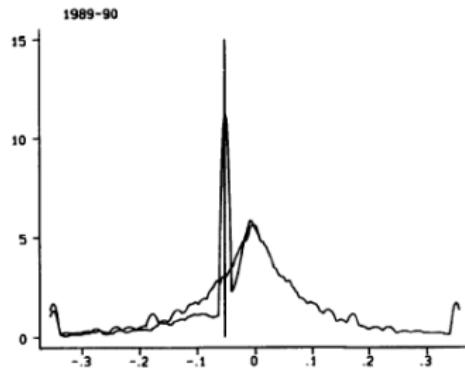
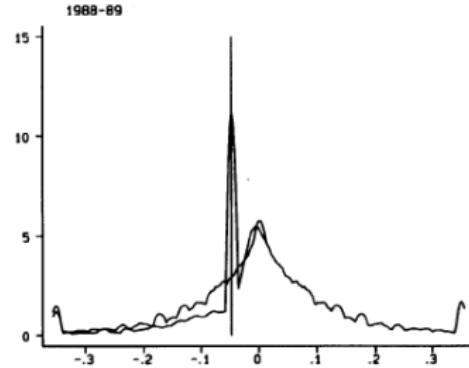
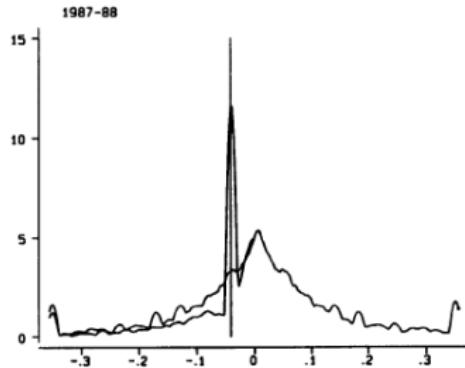
# Real Wage Changes, 1979-80 to 1982-83



# Real Wage Changes, 1983-84 to 1986-87

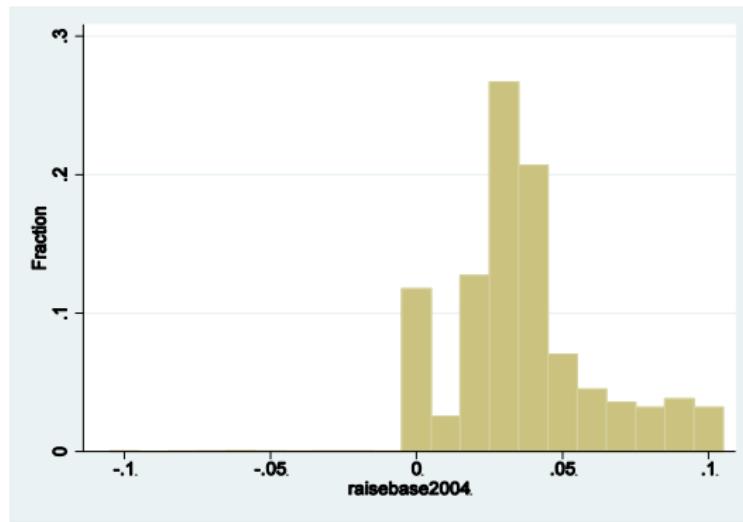


# Real Wage Changes, 1987-88 to 1998-91



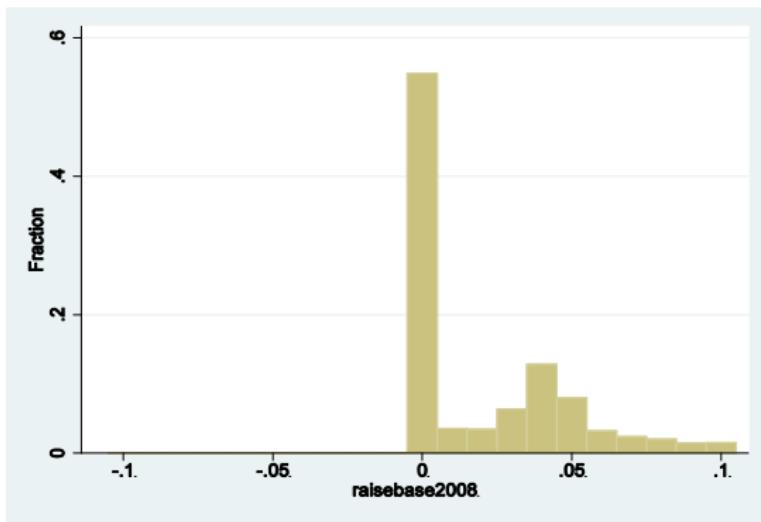
# Hipsman (2011): 2003 & 2004

- 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 → Demand of commitment
- Partial Naiveté → 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 1  
PARTICIPATION DATA FOR THE FIRST IMPLEMENTATION OF  
SMART

Number of plan participants prior to the adoption of the SMarT plan	315
Number of plan participants who elected to receive a recommendation from the consultant	286
Number of plan participants who implemented the consultant's recommended saving rate	79
Number of plan participants who were offered the SMarT plan as an alternative	207
Number of plan participants who accepted the SMarT plan	162
Number of plan participants who opted out of the SMarT plan between the first and second pay raises	3
Number of plan participants who opted out of the SMarT plan between the second and third pay raises	23
Number of plan participants who opted out of the SMarT plan between the third and fourth pay raises	6
Overall participation rate prior to the advice	64%
Overall participation rate shortly after the advice	81%

# Results

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

TABLE 2  
AVERAGE SAVING RATES (%) FOR THE FIRST IMPLEMENTATION OF SMART

	Participants Who Did Not Contact the Financial Consultant	Participants Who Accepted the Consultant's Recommended Saving Rate	Participants Who Joined the SMART Plan	Participants Who Declined the SMART Plan	All
Participants initially choosing each option*	29	79	162	45	315
Pre-advice	6.6	4.4	3.5	6.1	4.4
First pay raise	6.5	9.1	6.5	6.3	7.1
Second pay raise	6.8	8.9	9.4	6.2	8.6
Third pay raise	6.6	8.7	11.6	6.1	9.8
Fourth pay raise	6.2	8.8	13.6	5.9	10.6

\* 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 3  
AVERAGE SAVING RATES FOR ISPAT INLAND (%)

	EMPLOYEES WHO WERE ALREADY SAVING ON MAY 31, 2001		EMPLOYEES WHO WERE NOT SAVING ON MAY 31, 2001		ALL ELIGIBLE EMPLOYEES (N= 5,817)
	Joined SMarT (N=615)	Did Not Join SMarT (N= 3,197)	Joined SMarT (N= 165)	Did Not Join SMarT (N= 1,840)	
Pre-SMarT (May 2001)	7.62	8.62	.00	.00	5.54
First pay raise (October 2001)	9.38	8.54	2.28	.26	5.83

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

# Third Implementation

TABLE 4  
AVERAGE SAVING RATES (%) FOR PHILIPS ELECTRONICS

DATE	EMPLOYEES WHO WERE ALREADY SAVING IN DECEMBER 2001		EMPLOYEES WHO WERE NOT SAVING IN DECEMBER 2001		ALL EMPLOYEES
	Joined SMarT	Did Not Join SMarT	Joined SMarT	Did Not Join SMarT	
A. Control Group					
Observations		7,405		7,053	14,458
Pre-SMarT (December 2001)		5.65		.00	2.90
Post-SMarT (March 2002)		5.76		.70	3.29
B. Test Group (Divisions A and O Combined)					
Observations	180	339	36	260	815
Pre-SMarT (December 2001)	5.26	5.38	.00	.00	3.40
Post-SMarT (March 2002)	6.83	5.72	5.03	1.55	4.61
C. Division A					
Observations	66	190	10	163	449
Pre-SMarT (December 2001)	5.47	5.48	.00	.00	3.12
Post-SMarT (March 2002)	7.32	5.97	6.80	1.54	4.38
D. Division O					
Observations	114	149	26	77	366
Pre-SMarT (December 2001)	5.14	5.25	.00	.00	3.74
Post-SMarT (March 2002)	6.55	5.41	4.35	1.58	4.89

NOTE.—The "test" group consists of individuals at Divisions A and O.

# Issues

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

TABLE 6  
MEDIAN INCOME REPLACEMENT RATIOS (%)

INCOME	AGE			
	25	35	45	55
A. Pre-SMarT				
\$25,000	57	57	56	55
\$50,000	51	51	51	54
\$75,000	48	49	46	43
B. Post-SMarT				
\$25,000	108	90	75	63
\$50,000	98	83	70	62
\$75,000	90	77	63	50

NOTE.—The table displays the median income replacement ratios for different age and income profiles, using investment advice software by Financial Engines. The projections are based on the following assumptions: no defined-benefit pension, statutory social security benefits, employee saving rate of 4 percent before SMarT and 14 percent thereafter, employer match of 50 cents on the dollar up to 6 percent, portfolio mix of 60 percent stocks and 40 percent bonds, and retirement age of 65.

- General equilibrium effect of increase in savings on returns
- Why didn't a company offer it? How about teaching people?

# Psychology & Economics & Public Policy

- 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 intentioned, 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

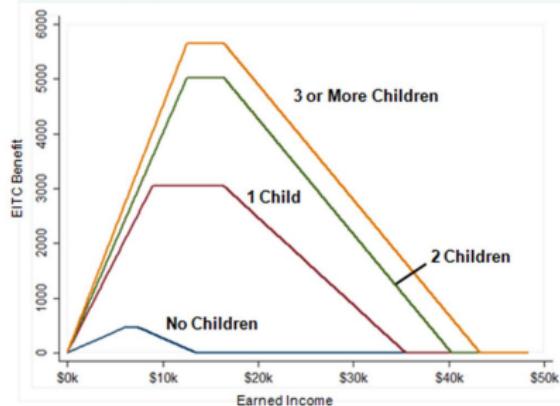
- **Loewenstein and Volpp's work on health outcomes**
  - Series of Randomized Trials
  - Leverage incentives with lotteries (probability weighting)
  - Use team incentives...
  - Outcomes: Weight loss, exercise, remembering to take pill,...
- **Bhargava and Manoli (AER 2016): ETIC take-up**

## MOTIVATION & BACKGROUND

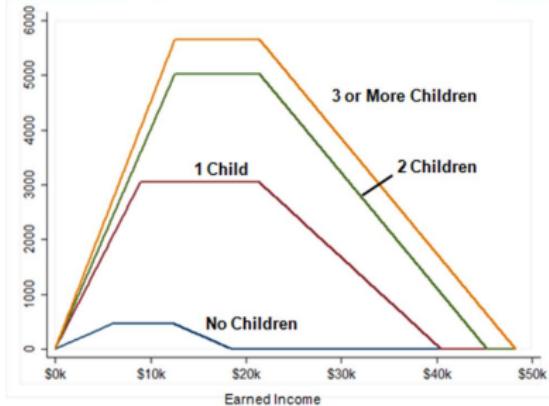
- **EITC is largest means-tested cash transfer program.** It disburses \$58 billion per year to 26 million recipients through income supplement that encourages work
- Fully refundable, supplements earned income by average of 17% which amounts to \$2,100. Must file your taxes to claim
- **25% of eligible 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**

(A1A) EITC Benefit Schedule for Single/HOH Filers



(A1B) EITC Benefit Schedule for Married Filers



# 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

EITC3

## A SURVEY TO HELP IMPROVE TAX FORMS

This survey has been prepared by researchers at the University of Chicago and UCLA, to help improve the Earned Income Tax Credit. Your response to this survey is voluntary, and you may choose not to answer any question. All responses are anonymous and meant only for research purposes; no identifying information will be recorded. If you have questions about this survey, please contact us at [bhavay@uchicago.edu](mailto:bhavay@uchicago.edu), or [domini@econ.ucla.edu](mailto:domini@econ.ucla.edu).

This survey is expected to take less than 5 minutes to complete. Please answer questions to the best of your ability even if you are not completely sure of your answer. Thank you for your help!

**Part 1: Background Information**  
First, we'd like to know a little about you.

1. What is your year of birth? \_\_\_\_\_

2. What is your zip-code? \_\_\_\_\_

3. What is your gender?  Male  Female

4. What is your highest level of education?  
 College Degree  Some College  High School or GED  Some High School  No High School

5. Please check the box that best describes your income tax filing status:  
 Single  Married, filing jointly with spouse  
 Head of household (e.g., Single with kids)  Married, filing separately

6. What were your total earnings in 2010? (If married, what were your total household earnings)?  
 Less than \$4,000  \$4,000 to \$8,000  \$8,001 to \$12,000  \$12,001 to \$16,000  
 \$16,001 to \$20,000  \$20,001 to \$24,000  \$24,001 to \$28,000  \$28,001 to \$32,000  
 \$32,001 to \$36,000  \$36,001 to \$40,000  \$40,001 to \$44,000  More than \$44,000

7. Now, we'd like a more exact estimate of your earnings. To the nearest \$1,000, what were your total earnings in 2010? (If married, write down your total household earnings)  
\$ \_\_\_\_\_ (to the nearest \$1,000)

8. In 2010, how many kids younger than 19 lived with you?  
 0 kids  1 kid  2 kids  3 or more kids

Please turn this page over and continue the survey...

- 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 (Lieberman 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	2010	March	May	Nov
Jan to Dec	Feb			

Earn income,  
qualify for EITC,  
(CA only)

File TY 2009  
taxes, neglect  
to claim EITC

IRS reminds  
you to claim with  
CP09/27 notice

For 41% who  
return CP, IRS  
mails check

Experimental notices  
mailed to CP  
non-respondents (CA)

**IRS Department of the Treasury  
Internal Revenue Service  
Wash., DC 20530-0001  
800-829-1040**

**40091**

**You May Be Eligible for a Refund  
If You Qualify for the Earned Income Credit**

**Important information about the Earned Income Credit  
You may be eligible for a refund**

**Why We Are Sending You This Notice**

We are writing to you because you may qualify for the Earned Income Credit (EIC). This notice is to help you determine if you qualify.

- Your income falls in the eligible range to receive the EIC.
- You have a dependent who may be an EIC qualifying child.
- You did not claim the EIC on your 2009 Individual Income Tax Return.

**What You Need to Do**

Please answer the questions that determine if you qualify. Complete the enclosed EIC Eligibility Check-Sheet to see if you qualify. If you do not qualify, you can skip the check-sheets.

- Answer the questions in Step 1.
- Any YES answer means you do not qualify.
- NO answers to both questions mean you may qualify.
- In Step 2, fill in the name and Social Security Number for the child you are claiming as a dependent in Step 1.
- Answer the questions in Step 3.
- Any NO answer for a child means that child is not your dependent. Do not respond to this notice unless you have a qualifying child.
- All YES answers mean a child is qualifying child for the EIC. Fill in the name and Social Security Number for your dependent. If you had a prior return, Mail the completed EIC Eligibility Check-Sheet to the IRS.

**Note: Return the EIC Eligibility Check-Sheet as soon as you file the EIC.**

**Information about the Earned Income Credit**

Do not attach or include this notice in your tax return or additional money.

**Summary**

Our records show that you may be eligible to receive up to \$4,300 in tax credits for your dependents. You may also be eligible for additional credits if you are disabled or if you are a single parent.

**What You Need to Do**

Complete the Eamic Form Credit Worksheet on Page 1.

If the worksheet confirms that you are eligible for the credit, file your tax return as soon as possible. If you do not file your tax return by April 15, you will owe taxes plus interest.

If the worksheet indicates that you are not eligible for the credit, please do not return the worksheet.

**Next Steps**

If you are eligible for the credit, we will send you a refund check if it is due. If you are not eligible for the credit, we will issue a credit adjustment to your account. If you are eligible for the credit but owe taxes, file your return more quickly, why wait? On the EIC line of your tax return, enter the amount of the credit adjustment and the amount you owe. If you file your return late, you will owe taxes plus interest.

If you need additional assistance, please call 1-800-908-1040, or visit our website at [www.irs.gov](http://www.irs.gov). You can also find forms and other documents which explain the EIC program in greater detail at [www.irs.gov](http://www.irs.gov).

**Additional Information**

If you need more information, please call 1-800-908-1040, or visit our website at [www.irs.gov](http://www.irs.gov). You can also find forms and other documents which explain the EIC program in greater detail at [www.irs.gov](http://www.irs.gov).

**Eamic Form Credit Worksheet**

Important below check YES NO

Answer's, if you had a joint Eamic Form Credit Worksheet, specify could get a refund

Check the box if you are married filing jointly and your spouse could get a refund

Then

Continue on to Step 2.

If you do not qualify: Do not file the EIC on your tax return. If you have any qualifying children who do not live with you, do not file the EIC on their tax return. If you file the EIC on your tax return, you may not be entitled to claim the EIC for your children under the rules for children of nonrespondents.

Social Security Number

Social Security Number

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# ORGANIZATION OF TREATMENTS I

Table 3  
EXPERIMENTAL INTERVENTIONS BY MECHANISM

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

## (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 (ADAPTED FROM CP)

Summary  
of the  
notice and  
program

**Headline describing purpose of notice**

**You May Be Eligible for a Refund If You Qualify for the Earned Income Credit**

**Why We Are Sending You This Notice**

You may qualify for the earned income credit (EIC). The EIC is for certain people who work and have earned money during the year. It helps you keep more of your money in your pocket. It reduces the amount of tax you owe, and may give you a refund. Our records show:

- Your income falls in the eligible range to receive the EIC.
- You have a dependent who may be an EIC qualifying child, and
- You did not claim the EIC on your 2009 Individual Income Tax Return.

**What You Need To Do**

Income is not the only condition that determines if you qualify for EIC. We need you to complete the enclosed EIC Eligibility Check-Sheet to see if you may qualify for the EIC. Take the following steps to complete the check-sheet:

- Check that you are eligible for the EIC in Step 1.
- If your Social Security Number is not valid or if you are a qualifying dependent of another person, you do not qualify.
- If your Social Security Number is valid and you are not a qualifying dependent of another person, you may qualify. Continue to Step 2 only if you did not place a check next to any of the eligibility criteria in Step 1.
- In Steps 2 and 3, fill in the name and Social Security number for each child who may qualify you for the EIC and check that each child meets the stated requirements.
- Any NO answer for a child means that child is not your qualifying child for the EIC. Do not respond to this notice unless you have a qualifying child.
- All YES answers mean a child is your qualifying child for the EIC. Sign and date the declaration on the last page of this notice. Mail the completed EIC Eligibility Worksheet to us in the enclosed envelope.

Note: Return the EIC Worksheet to us only if you determine you may qualify for the EIC.

**Instructions for eligibility worksheet; very exclusionary language**

**Details of dependent eligibility, next steps, and instructions for further information**

For IRS use only - Code No. [redacted]



Department of the Treasury  
Internal Revenue Service  
Submission Processing Center  
PRESO, CA 93888-0405

Notice	EIC0927
Tax Year	2009
Notice Date	November 2010
Social Security Number	999-99-9999
To Contact Us	1-800-829-1040

Page 1 of 4

JAMES O HINDS  
22 BOULDER STREET  
HANSON, CT 06040-7253

## Important information about the Earned Income Credit You may be eligible for a refund

Do not discard or overlook this notice  
because you may be entitled to some  
additional money.

### Summary

Our records show that you may be eligible for a refund called the Earned Income Credit (EIC), which you did not claim on your 2009 tax form. The credit is for certain people who have worked and have earned income. You should complete the worksheet on Page 3 to determine if you are eligible for the credit.

### What you need to do

Complete the Earned Income Credit Worksheet on Page 3.

If the worksheet confirms that you are eligible for the credit:  
Sign and date the attached worksheet, and mail it to us in the enclosed envelope.

If the worksheet indicates that you are not eligible for the credit:  
Please do not return the worksheet to us.

### Next steps

If you are eligible for the credit, we will send you a refund check in 6 to 8 weeks. If you owe back taxes or other debts, such as child support which we are required to collect, we will use your credit to reduce or pay off those debts.

Next year, to receive your refund more quickly, write "EIC" on the EIC line of your form 1040. If you qualify for the credit, the IRS will calculate it for you and send you a check.

### Additional information

If you need additional assistance, please call 1-800-829-1040, or visit online at [www.irs.gov/eic](http://www.irs.gov/eic). For tax forms, call 1-800-TAX-FORM (1-800-829-3676).

You can also find tax forms and other helpful documents which explain the EIC program in greater detail (e.g., Publication 596) at [www.irs.gov](http://www.irs.gov).

## **"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



Department of the Treasury  
Internal Revenue Service  
Submission Processing Center  
Fresno, CA 93888-0406

Notice	EIC0927
Tax Year	2009
Month/Date	March/April 2010
Social Security Number	999-99-9999
To Contact Us	1-800-829-1040
Page	3 of 4

INTERNAL REVENUE SERVICE  
Submission Processing Center  
Fresno, CA 93888-0406

### Earned Income Credit Worksheet

**Step 1** Read each statement listed below, and place a checkmark next to any that describes you.

- My Social Security card reads "Not Valid for Employment," AND my Social Security card was issued so I could receive federally funded benefits such as Medicaid.
- I was an Earned Income Credit qualifying dependent of another person in 2009.

You may be a qualifying dependent of another person if you live with your parents or other caretaker for more than half the year AND are either under the age of 19, are a student and under the age of 24, or are permanently or totally disabled at any age.

If you checked any of the above boxes, you are not eligible for the credit. Please do not continue completing this worksheet.

If you did not check any of the above boxes, you are likely eligible for the credit. Please continue to Step 2.

Please call 1-800-829-1040 or visit [www.irs.gov](http://www.irs.gov) for additional information regarding the above requirements.

**Step 2** Provide the information requested below for no more than three of your dependents who lived with you in 2009, and are related to you. A dependent is related to you if they are your son, daughter, stepchild, adopted child, brother, sister, grandchild, or any of their descendants, or a foster child.

Do not provide information if:

- \* The dependent has a Social Security card that reads "Not Valid for Employment," and the Social Security number was issued so the dependent could receive a federally funded benefit, such as Medicaid.
- \* The dependent filed a joint return for reasons other than claiming a tax refund.

Dependent #1

Name \_\_\_\_\_ Social Security number \_\_\_\_\_  
or Taxpayer ID number \_\_\_\_\_

Dependent #2

Name \_\_\_\_\_ Social Security number \_\_\_\_\_  
or Taxpayer ID number \_\_\_\_\_

Dependent #3

Name \_\_\_\_\_ Social Security number \_\_\_\_\_  
or Taxpayer ID number \_\_\_\_\_

## 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



Department of the Treasury  
Internal Revenue Service  
Submission Processing Center  
Pleasanton, CA 94568-0405

Notice EIC0927  
Tax Year 2009  
Model Date September 2010  
Social Security Number 999-99-9999  
To Contact Us 1-800-829-1040  
Page 3 of 4

INTERNAL REVENUE SERVICE  
Submission Processing Center  
Pleasanton, CA 94568-0405

### Earned Income Credit Worksheet

Step 1 Read each statement listed below, and place a checkmark next to any that describes you.

- My Social Security card reads "Not Valid for Employment," AND my Social Security card was issued so I could receive federally funded benefits such as Medicaid
- I was an Earned Income Credit qualifying dependent of another person in 2009

You may be a qualifying dependent of another person if you live with your parents or other caretaker for more than half the year AND are either under the age of 18, are a student and under the age of 24, or are permanently or totally disabled at any age.

- My filing status in 2009 was "Married filing separately".
- I was not a U.S. citizen (or resident alien) for any part of 2009.
- I filed Form 2555 (Foreign-Earned Income) or Form 2555-4Z (Foreign-Earned Income Exclusion) in 2009.
- My investment income was greater than \$3,100 in 2009.
- I did not have earned income in 2009.

If you checked any of the above boxes, you are not eligible for the credit. Please do not continue completing this worksheet.

If you did not check any of the above boxes, you are **likely** eligible for the credit. Please continue to Step 2.

Please call 1-800-829-1040 or visit [www.irs.gov/eic](http://www.irs.gov/eic) for additional information regarding the above requirements.



## 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



Department of the Treasury  
Internal Revenue Service  
Submission Processing Center  
Pittsburgh, PA 15289-0405

JAMES O'HANLON  
22 BOULDER STREET  
HANSON, CT 06040-7263

Notice	EIC0927
Tax Year	2009
Notice Date	November 2010
Social Security Number	999-99-9999
To Contact Us	1-800-829-1040

Page 1 of 4

Important information about the Earned Income Credit:  
**You may be eligible for a refund of up to \$3,043**



Do not discard or overlook this notice  
because you may be entitled to some  
additional money.

Depending on your earnings and  
eligibility, your benefit can be up to  
\$3,043.

#### Summary

Our records show that you may be eligible for a refund called the Earned Income Credit (EIC). You did not claim on your 2009 tax form. The credit, which can be up to \$3,043, is for certain people who have worked and have earned income. You should complete the worksheet on Page 3 to determine if you are eligible for the credit.

#### What you need to do

Complete the Earned Income Credit Worksheet on Page 3.

If the worksheet confirms that you are eligible for the credit:  
Sign and date the attached worksheet, and mail it to us in the enclosed envelope.

If the worksheet indicates that you are not eligible for the credit:  
Please do not return the worksheet to us.

#### Next steps

If you are eligible for the credit, we will send you a refund check in 6 to 8 weeks. If you owe back taxes or other debts, such as child support which are required to collect, we will use your credit to reduce or pay off those debts.

Next year, to receive your refund more quickly, write "EIC" on the EIC line of your tax form. If you qualify for the credit, the IRS will calculate it for you and send you a check.

#### Additional information

If you need additional assistance, please call 1-800-829-1040, or visit online at [www.irs.gov/eic](http://www.irs.gov/eic). For tax forms, call 1-800-TAX-FORM (1-800-829-3676).

You can also find tax forms and other helpful documents which explain the EIC program in greater detail (e.g., Publication 596) at [www.irs.gov](http://www.irs.gov).

## 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



Department of the Treasury  
Internal Revenue Service  
Submission Processing Center  
Fresno, CA 93889-0405

JAMES Q. HINDS  
22 BOULDER STREET  
HANSON, CT 06040-7253

Notice	EIC0927
Tax Year	2009
Notice Date	November 2010
Social Security Number	999-99-9999
To Contact Us	1-800-829-1040

Page 1 of 4

Important information about the Earned Income Credit.  
**You may be eligible for a refund. Claiming your refund usually takes less than 60 minutes.**

Do not discard or overlook this notice because you may be entitled to some additional money.

To claim your benefit, simply complete and return this form. This usually takes less than 60 minutes.

#### Summary

Our records show that you may be eligible for a refund called the Earned Income Credit (EIC), which you did not claim on your 2009 tax form. The credit is for certain people who have worked and have earned income. You should complete the worksheet on Page 3 to determine if you are eligible for the credit.

#### What you need to do

Complete the Earned Income Credit Worksheet on Page 3.

If the worksheet confirms that you are eligible for the credit, sign and date the attached worksheet, and mail it to us in the enclosed envelope.

If the worksheet indicates that you are not eligible for the credit, please do not return the worksheet to us.

#### Next steps

If you are eligible for the credit, we will send you a refund check in 6 to 8 weeks. If you owe taxes or other debts, such as child support which we are required to collect, we will use your credit to reduce or pay off those debts.

Next year, to receive your refund more quickly, write "EIC" on the EIC line of your Form 1040. If you qualify for the credit, the IRS will calculate it for you and send you a check.

#### Additional information

If you need additional assistance, please call 1-800-829-1040, or visit online at [www.irs.gov](http://www.irs.gov). For tax terms, call 1-800-TAX-FORM (1-800-829-3676).

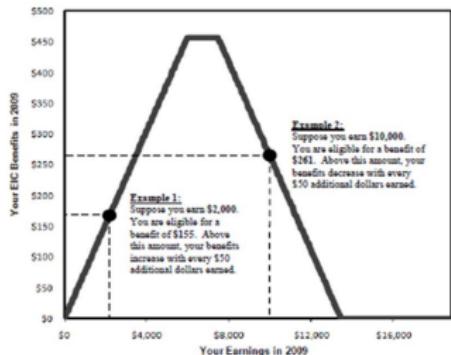
You can also find tax forms and other helpful documents which explain the EIC program in greater detail (e.g., Publication 596) at [www.irs.gov](http://www.irs.gov).

## COST DISPLAY

- Identical to baseline notice in design and content except...
- Headline communicates that completing worksheet should take less than 60 (or 10) minutes

## DO YOU KNOW ABOUT THE EARNED INCOME CREDIT?

The Earned Income Credit (EIC) is designed to provide benefits to working individuals and families. The picture below describes how benefit amounts change based on your yearly earnings (note that the picture is drawn for a single filer with no dependents).



## MYTHS AND REALITIES OF THE EIC

**Myth:** I cannot claim the EIC if I missed the April 18th deadline.

You can submit your tax return and claim the EIC up to 8 years after the April 18th deadline.

**Myth:** I can only claim the EIC if my income is very low.

You may qualify for benefits if your earnings are less than \$40,261, and less than \$46,286, if married.

**Myth:** My child is over 18, so I do not qualify for higher benefits.

If your child is a full-time student or disabled, you may still qualify for higher benefits.

**Myth:** I need to have a bank account to receive EIC benefits.

A check for your EIC benefits can be mailed to you.

**Myth:** I cannot claim the EIC if I am unemployed or self-employed.

You can claim the EIC as long as you have some earned income such as wage income or self-employment income.

**Myth:** I can only claim EIC benefits if I have children.

You can claim the EIC without children.

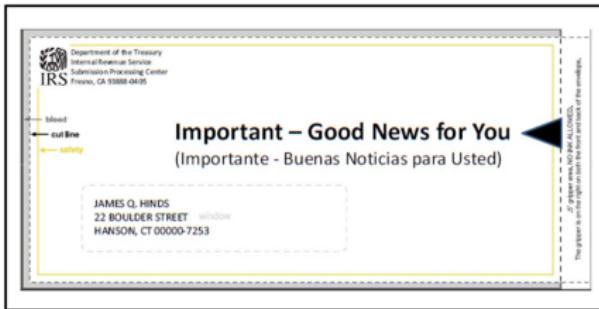
## INFORMATIONAL FLYER

- 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



## (C) PROGRAM STIGMA

### 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.”**

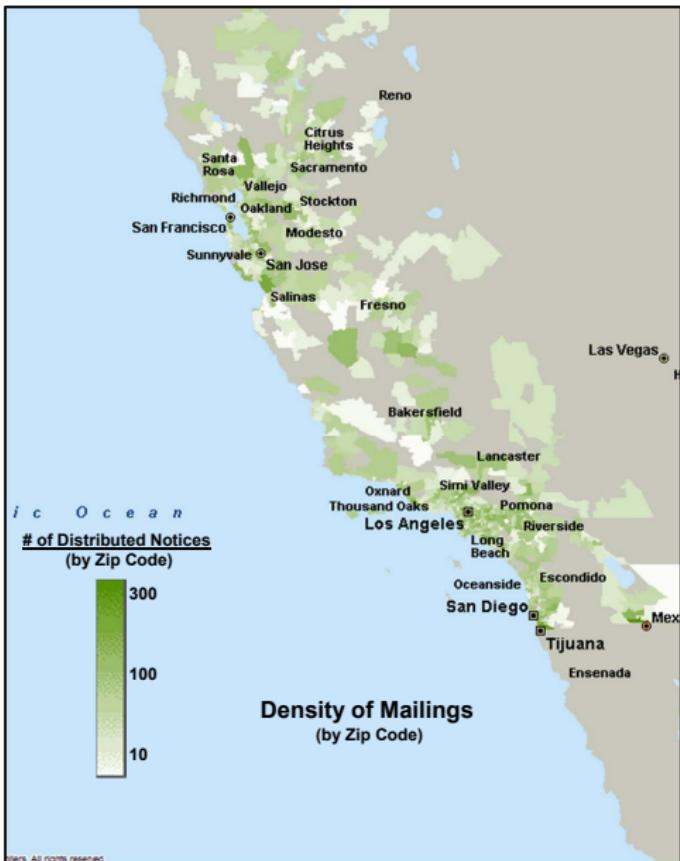
Notice Headline for Intervention 1

**“You may be eligible for a refund due to all your hard work.”**

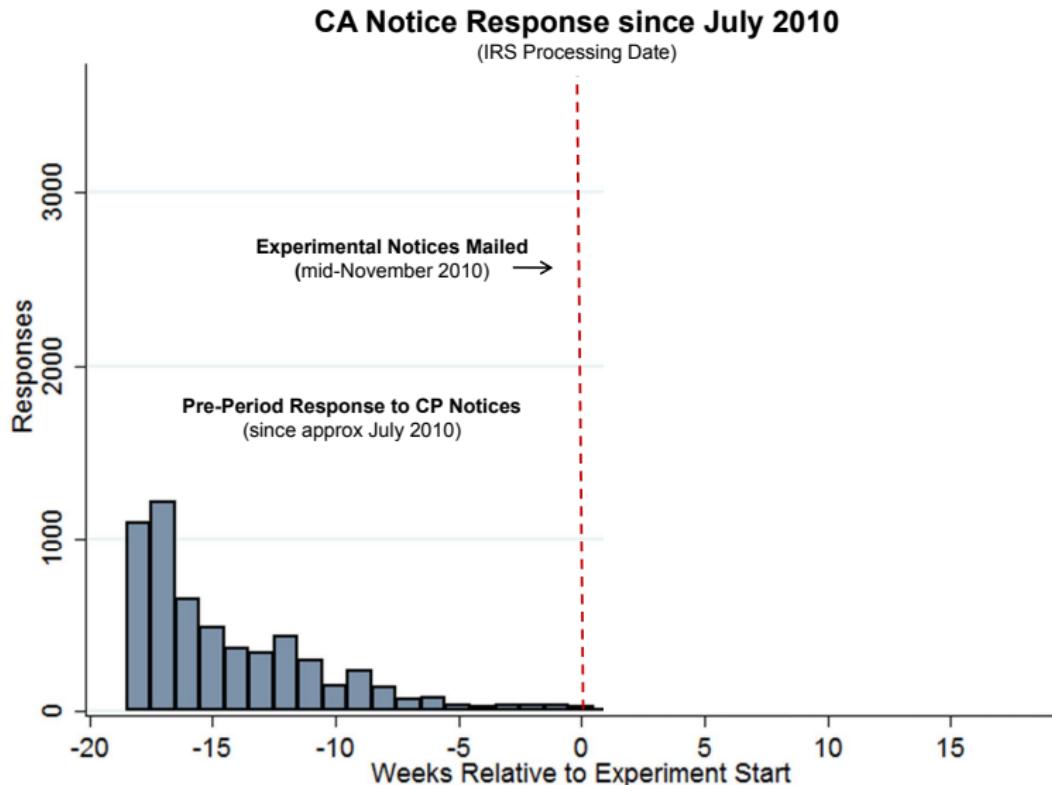
Notice Headline for Intervention 2

# 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?



# SUMMARY OF OVERALL RESPONSE

SUMMARY OF RESPONSE FOR INITIAL & EXPERIMENTAL NOTICE

	ALL SAMPLE			W/O DEPENDENTS			W/ DEPENDENTS		
	Response	Benefit Size	Deny	Response	Benefit Size	Deny	Response	Benefit Size	Deny
CP First Notice (CA TY 2009)	0.41	\$570	0.02	--	--	--	--	--	--
Overall Response	0.22	\$511	0.01	0.25	\$247	0.00	0.16	\$1,531	0.03
Overall Response - Hispanic Adjusted	0.25	\$530	0.01	0.26	\$245	0.00	0.21	\$1,638	0.02
Control (Complex N + Complex WS)	0.14	\$546	0.01	0.17	\$294	0.00	0.10	\$1,570	0.02
Simple (Simple N + Simple WS)	0.23	\$514	0.01	0.27	\$246	0.00	0.16	\$1,616	0.03
Simple + Information	0.28	\$531	0.01	0.31	\$242	0.00	0.21	\$1,643	0.04
Simple + Low Stigma	0.22	\$452	0.01	0.25	\$255	0.00	0.14	\$1,330	0.03

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.

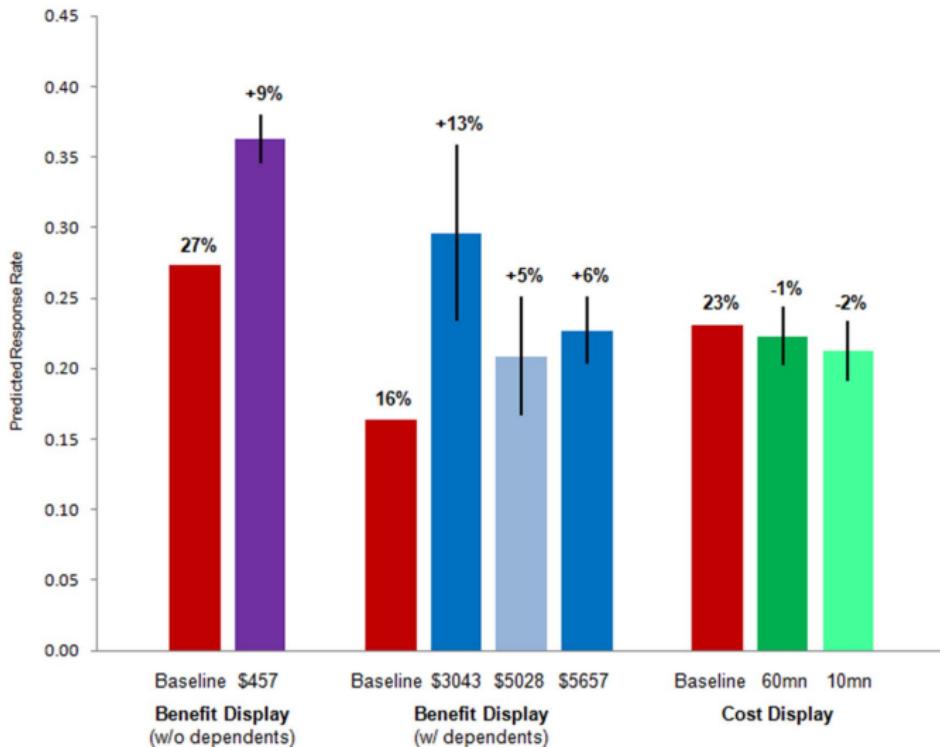
- Mere receipt of second notice yields 0.22 response (0.14 control condition)
- Language may be a barrier to response
- Simplification raises response from .14 to .23; Information from .23 to .28; No beneficial effect of lower stigma**
- Effects not driven by denial of claims rate

RESPONSE AND DENIAL BY EXPERIMENTAL TREATMENTS							
	DEPENDENT VARIABLE - (PROBIT)				YES/NO DENIAL		
	YES/NO RESPONSE				YES/NO DENIAL		
	Baseline (1)	w/ Controls (2)	w/o Deps (3)	w/ Deps (4)	Baseline (5)	w/ Controls (6)	
[Sample Notice & Worksheet - Excluded]							
<b>Complexity Interventions</b>							
Complex Notice	-0.069*** (0.008) [-49%]	-0.065*** (0.008) [-46%]	-0.065*** (0.010) [-38%]	-0.060*** (0.010) [-60%]	-0.0001 (0.0000)	-0.0001 (0.0000)	
Complex Worksheet	-0.043*** (0.005) [-31%]	-0.041*** (0.005) [-29%]	-0.054*** (0.006) [-32%]	-0.012 (0.007) [-12%]	-0.0001 (0.0000)	-0.0001 (0.0000)	
<b>Informational Interventions</b>							
Benefit Display	0.084**** (0.007) [+37%]	0.083*** (0.007) [+36%]	0.085*** (0.009) [+21%]	0.066*** (0.011) [+41%]	0.0003* (0.0000)	0.0003* (0.0000)	
Claiming Cost Display	-0.014 (0.009) [-6%]	-0.016* (0.008) [-7%]	-0.015 (0.010) [+6%]	-0.008 (0.012) [-5%]	0.0002 (0.0000)	0.0003 (0.0000)	
Indemnity from Penalty Worksheet	0.005 (0.005) [+2%]	0.006 (0.005) [+3%]	0.003 (0.006) [+3%]	0.007 (0.007) [+1%]	0.0001 (0.0000)	0.0001 (0.0000)	
Informational Flyer	-0.040*** (0.008) [-17%]	-0.039*** (0.008) [-17%]	-0.047*** (0.009) [-17%]	-0.019* (0.011) [-12%]	0.000 (0.0000)	0.000 (0.0000)	
Envelope Message	-0.007 (0.005) [-3%]	-0.007 (0.005) [-3%]	-0.01 (0.006) [-4%]	-0.001 (0.007) [-1%]	0.000 (0.0000)	0.000 (0.0000)	

## Response and Denial by Experimental Treatments

Stigma Interventions							
Personal Stigma Reduction	-0.007 (0.011) [-3%]	-0.009 (0.011) [-4%]	-0.012 (0.014) [-4%]	0.001 (0.016) [+1%]	0.0003 (0.0000)	0.0003 (0.0000)	0.0004 (0.0000)
Social Stigma Reduction	-0.048*** (0.011) [-21%]	-0.046*** (0.010) [-20%]	-0.047*** (0.013) [-17%]	-0.037** (0.015) [-23%]	-0.0002 (0.0000)	-0.0002 (0.0000)	-0.0002 (0.0000)
Fixed Effects, I(Deps)	X	X	X	X	X	X	X
Controls			X				X
N	35,050	35,050	23,618	11,432	35,050	35,050	
Pseudo R-Squared	0.02	0.03	0.01	0.01	0.17	0.22	
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 Interv.	0.00	0.00	0.00	0.00	0.32	0.31	
P-value of F-Test - Informational Inter.	0.28	0.30	0.69	0.15	0.13	0.12	
P-value of F-Test - Stigma Interventor	0.00	0.00	0.11	0.96	0.77		

## Predicted Response for Benefit and Cost Notices



## 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

② 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)

② 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

- ③ 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

④ 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

- ⑤ 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!

⑥ 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!