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

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Outline

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

Section 1

Behavioral Corporate Finance

Behavioral Corporate Finance

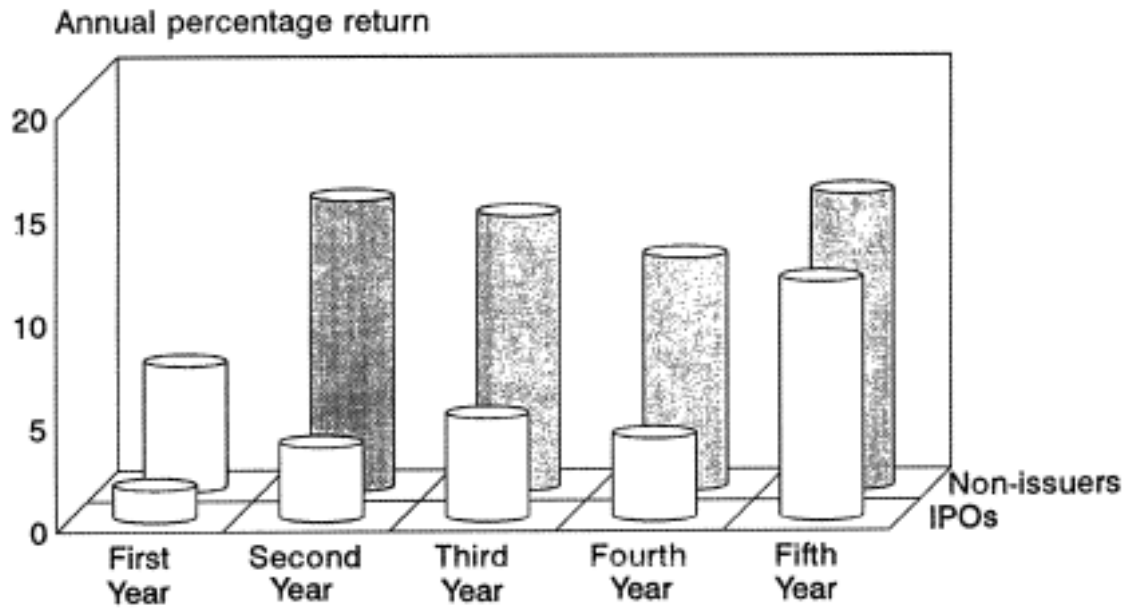
- **Version 1. Behavioral Managers, Rational Investor**
  - **Malmendier and Tate** on mergers, cash-flow sensitivity
- **Version 2. Rational Managers, Behavioral Investors**
- **Baker, Ruback, and Wurgler (2005)**. Firm has to decide how to finance investment project:
  1. internal funds (cash flow/retained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

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

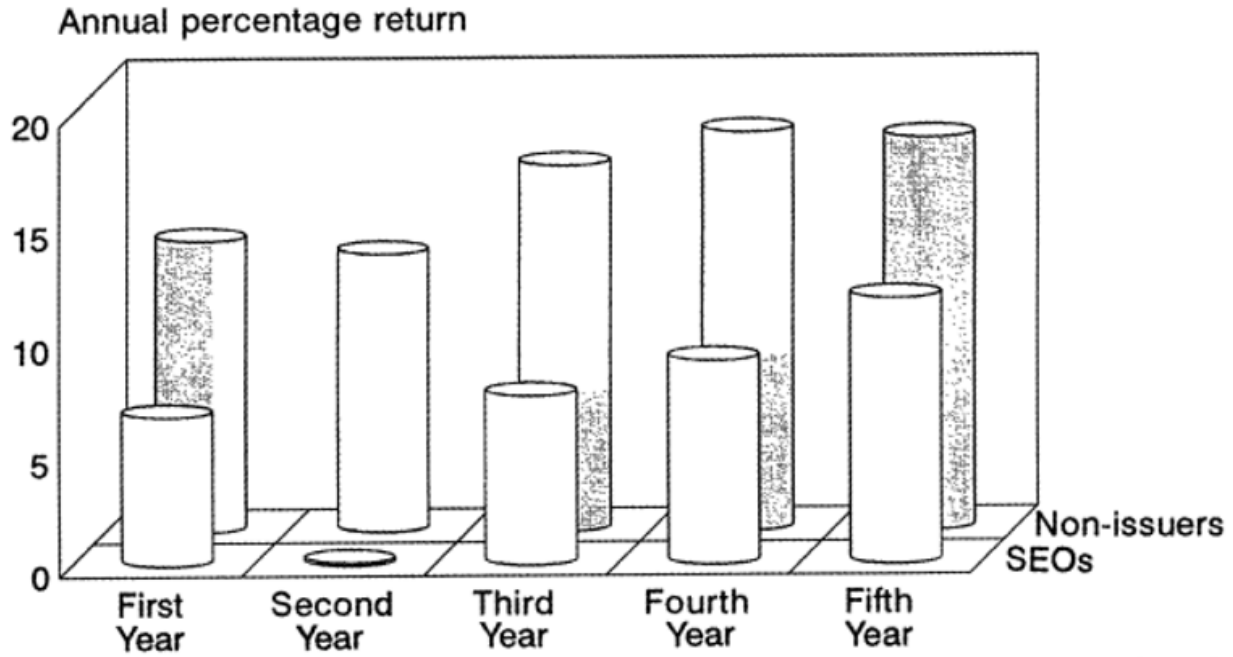


Figure 2. The average annual raw returns for 4,753 initial public offerings (IPOs), and their matching nonissuing firms (top), and the average annual raw returns for 3,702 seasoned equity offerings (SEOs), and their matching nonissuing firms (bottom), during the five years after the issue. The equity 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

History by Field

- Fields of applications of Behavioral Economics
- 1980s and 1990s
  - Behavioral Finance (Asset Pricing)
  - Behavioral Household Finance
- 2000 on
  - Behavioral Corporate Finance
  - Behavioral Development Economics
  - Behavioral Industrial Organization
- Last 5-10 years
  - Behavioral Public Finance
  - Behavioral Health Economics
  - Behavioral Political Economy
  - Behavioral Education Economics

Early Behavioral Labor

- What about Behavioral Labor Economics?
- Work since early days of behavioral econ:
  - Inter-industry wage differentials (Thaler, 1989)
  - Fairness constraints (Kahneman-Knetsch-Thaler, 1986)
  - Gift Exchange (Akerlof, 1982, 1984)
- Yet, did not quite pick up pace
- Surprising because of deep psych roots in labor econ
  - Institutionalists influenced by Veblen
  - Richard Ely: "exploring the human problem by the psychological method"
  - Albert Rees / John Dunlop: key role of fairness in labor negotiation

Five Areas

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

Present Bias

- What determines effort at the workplace?
  - Explicit and implicit incentives (e.g., promotions)
  - But also motivation and social preferences
- Factor 1: **Present bias**
  - Work entails immediate effort costs and delayed benefit
  - Present bias –> Not work hard enough
  - Kaur, Kremer, Mullainathan (JPE) in the field
  - Augenblick, Niederle, Sprenger (QJE) with real effort task

Social Preferences

- Factor 2: **Social Preferences**
  - If motivation important for effort, may justify paying higher wages to trigger reciprocity (Akerlof 1981)
- Two dimensions of motivation:
  - Vertical Social Preferences (toward employer)
  - Horizontal Social Preferences (toward co-employees) – Card et al (2012)
- Two dimensions of effort:
  - Extra effort that helps the employer (e.g., fix production defect) – eg, Hjort (2014)
  - Boycott that hurts employer (e.g., stealing stationery) – eg, Krueger-Mas (2004)

Other Factors

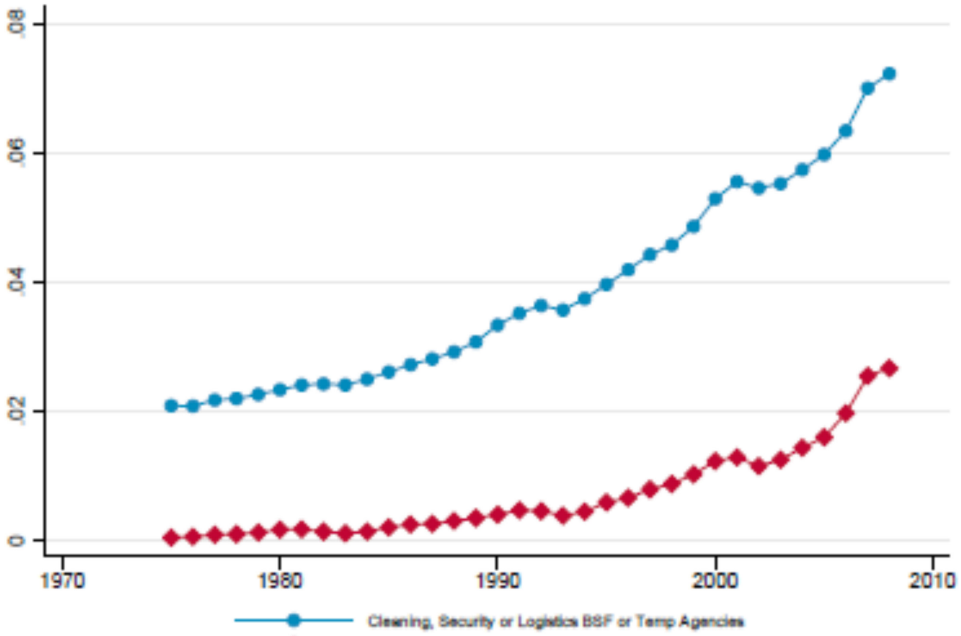
- Other factors
- **Non-financial rewards** as motivators (eg Akerlof and Kranton; Besley-Ghatak; Ashraf, Bandiera and Jack)
  - Evidence mixed on importance
- **Crowd-out** of motivation from financial rewards (Gneezy and Rustichini QJE)
  - Not much evidence
- **Overconfidence** of workers, matters for eg, retention of truckers (Hoffman and Burks)

Wage Setting

- Implications of effort findings for wage setting
- **Present bias** –> Commitment devices
  - Why so uncommon? (Laibson AEA)
- **Vertical social preferences** –>
  - Gift exchange / efficiency wages maybe
  - Constraints on Manager pay (Mas, 2015)
- **Horizontal social preferences** –>
  - Pay compression / wage differentials across firms (Card, Heining, Kline QJE)
  - Drives outsourcing (Goldschmidt and Schmieder QJE)
- **Overconfidence** of workers –> Stock options (Bergman and Jenter, 2007; Cowgill and Zitzewitz, 2015)

Wage Setting, Outsourcing

- Pay compression:
  - Some firms pay more than others
  - This applies also to low skill workers
  - As competition strengthens save $ by outsourcing low-skill workers (Goldschmidt and Schmieder QJE)
- Germany : Share of outsourced workers much increased



Wage Setting, Outsourcing

- More outsourcing in firms with higher pay, controlling for all else
- Preferences for equity have indirect effects

Table III: The Effect of Proxies for Wage Premia on the Probability of Outsourcing

	All Establishments				Establishment Panel Sample	
	(1)	(2)	(3)	(4)	(5)	(6)
Log Estab Size	0.0084***					
	(0.00016)					
Log Avg Estab Wage		0.00044				
		(0.00032)				
AKM Effect			0.0046***			
			(0.00057)			
Wage Premium to FSCL workers over BSF firms				0.0015***		
				(0.00026)		
Collective Agreement					0.0091***	
					(0.0013)	
Pay Wages Above Standard						0.0029**
						(0.0014)
Observations	2086507	2086505	1892408	1769077	68577	68595
Mean of Dep Var	.012	.012	.011	.014	.02	.02
Mean of Indep Var	4.788	4.285	.003	1.162	.81	.34

Wage Setting, Nominal Wage Rigidity

- **Kahneman, Knetsch and Thaler (1986)**
- Telephone surveys in Canada in 1984 and 1985 $\rightarrow$ Ask questions on fairness

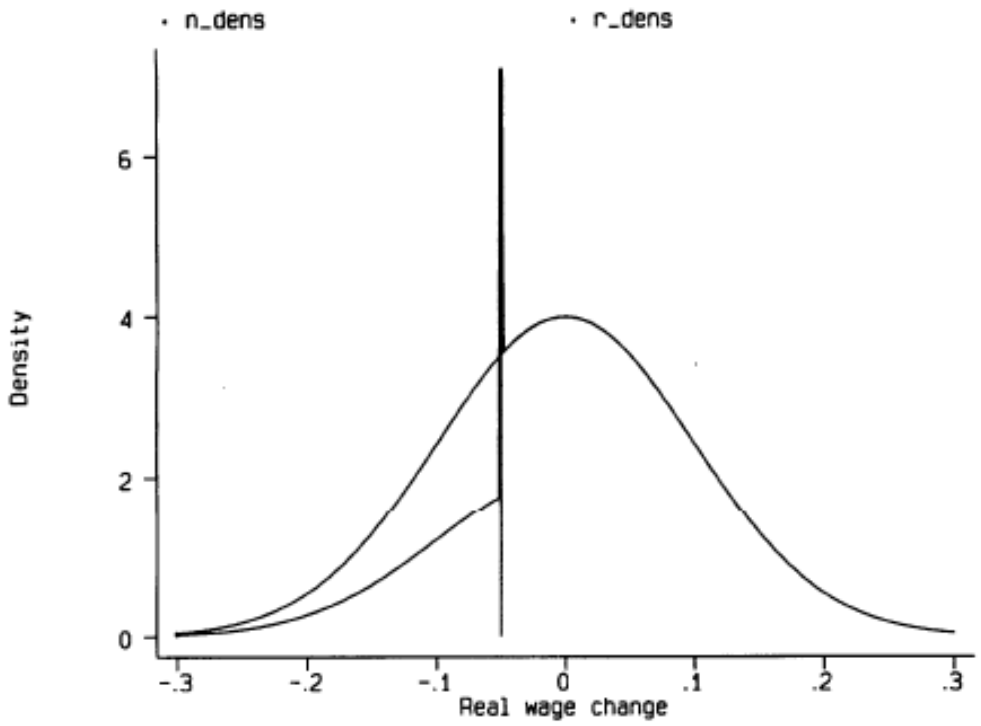
Question 4A. A company is making a small profit. It is located in a community experiencing a recession with substantial unemployment but no inflation. There are many workers anxious to work at the company. The company decides to decrease wages and salaries 7% this year.
($N = 125$) Acceptable 38% Unfair 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)
- **Bewley (1999)** interviews of managers and workers
  - They hate nominal wage cuts –> Expect employers to avoid nominal wage decreases ($w_t - w_{t-1} < 0$)

Wage Setting, Nominal Wage Rigidity

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



Wage Setting, Nominal Wage Rigidity

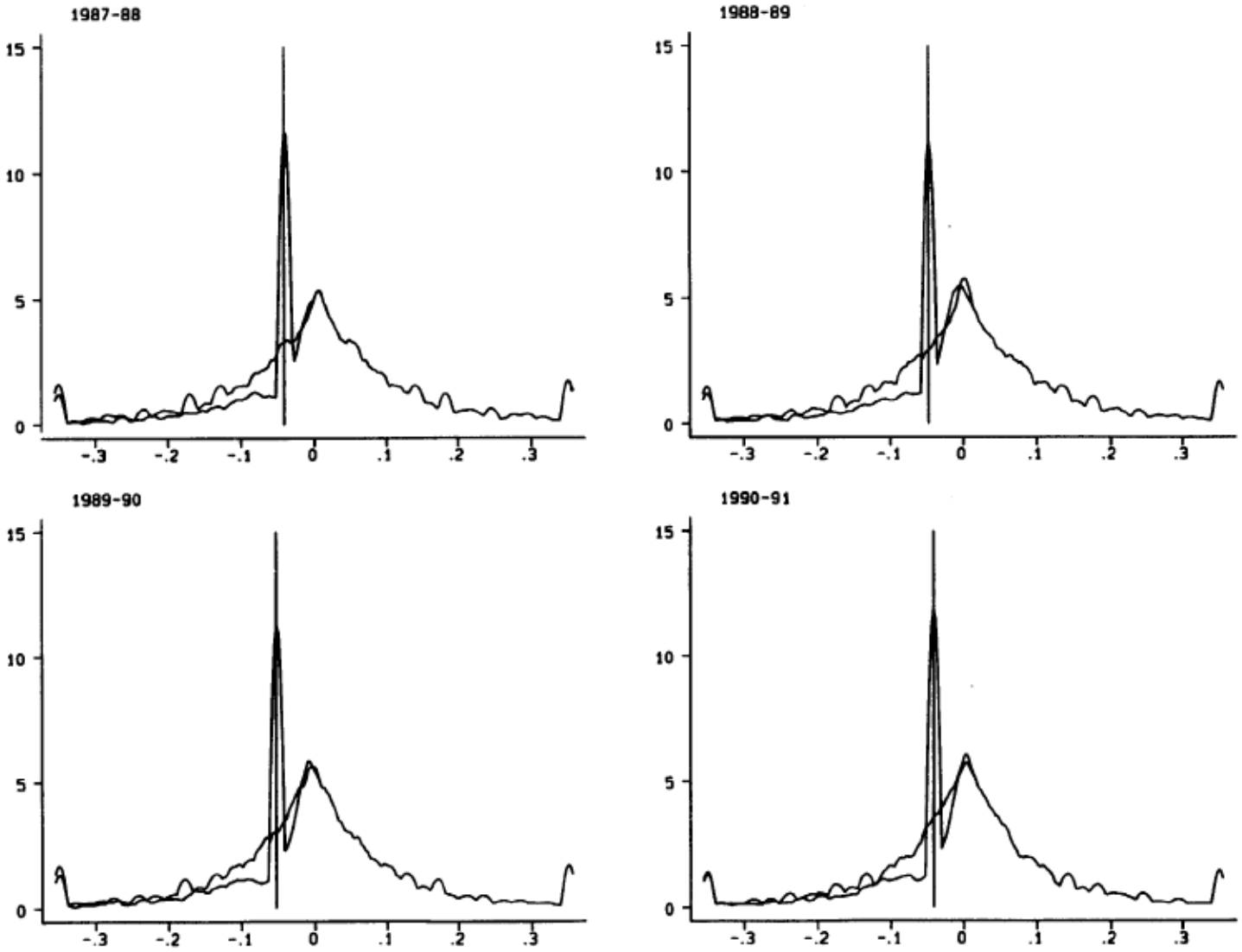
- Data sources:
  - 1979-1993 CPS.
    - Rolling 2-year panel
    - Restrict to paid by the hour and to same 2-digit industry in the two years
    - Restrict to non-minimum wage workers
  - PSID 4-year panels 1976-79 and 1985-88
- Use Log Wage changes: $\log w_t - \log w_{t-1}$
- Issue with measurement 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

Wage Setting, Nominal Wage Rigidity

- 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

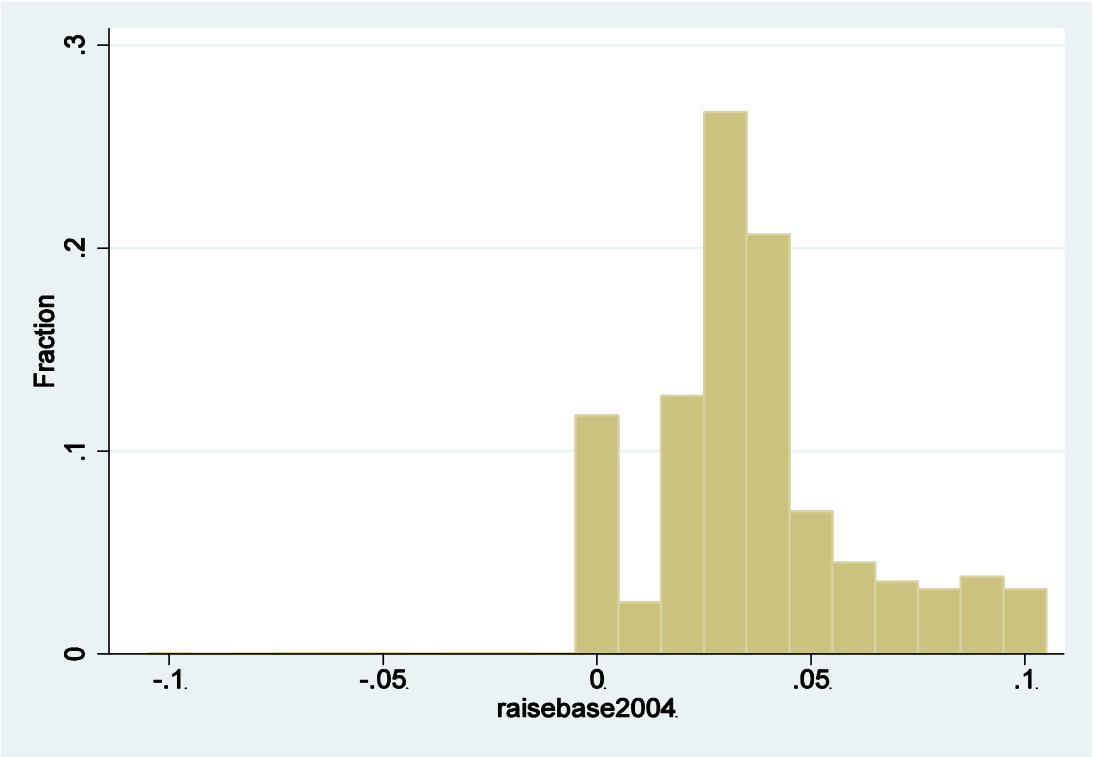
- Large effect of nominal rigidities
- Effect on firings?

Real Wage Changes, 1987-88 to 1998-91



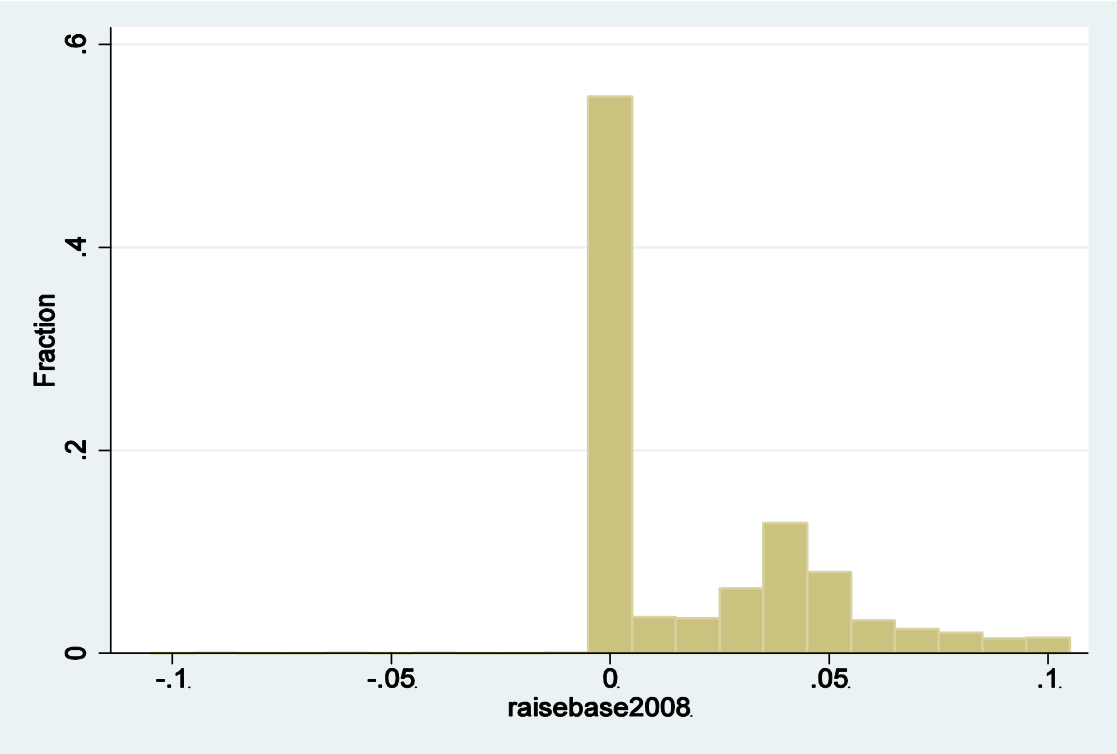
Hipsman (2011): 2003 & 2004

- 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

Job Search, Simple Model

- Job search model with optimal search effort, no reservation wage
- An **unemployed** worker's value function is

$$V_t^U = \max_{s_t \in [0,1]} u(y_t) - c(s_t) + \delta \left[s_t V_{t+1}^E + (1 - s_t) V_{t+1}^U \right]$$

- Solution for **optimal search**:

$$c'(s_t^*) = \delta \left[V_{t+1}^E - V_{t+1}^U \right]$$

- Where could standard model be too restrictive?

Job Search, Present Bias

- **Present Bias**: DellaVigna and Paserman (JOLE 2005): An **unemployed** worker's value function is

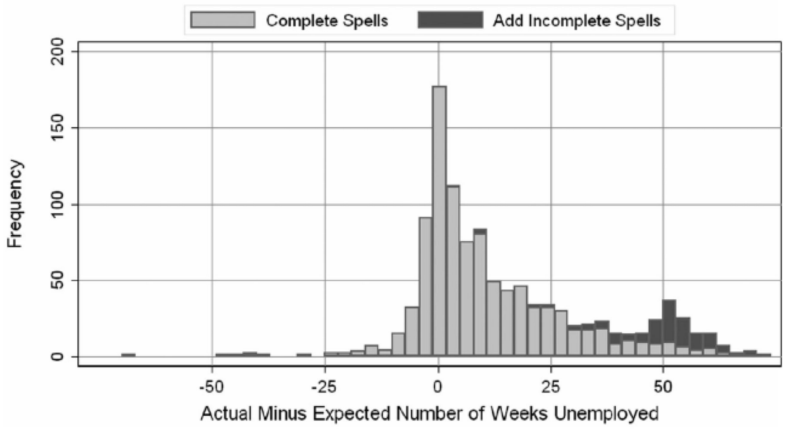
$$V_t^U = \max_{s_t \in [0,1]} u(y_t) - c(s_t) + \beta\delta \left[s_t V_{t+1}^E + (1 - s_t) V_{t+1}^U \right]$$

  - **Search effort**: search too little if $\beta < 1$
  - **Reservation wage** unaffected (under naivete')
- Can lead to different policy implications (Paserman EJ 2008), but observationally hard to distinguish
- **Reference Dependence** (DellaVigna et al 2017): Flow utility $u(y_t, r_t)$ also depends on reference point r_t:

$$u(y_t, r_t) = \begin{cases} v(y_t) + \eta(v(y_t) - v(r_t)) & \text{if} \quad y_t \geq r_t \\ v(y_t) + \eta\lambda(v(y_t) - v(r_t)) & \text{if} \quad y_t < r_t \end{cases}$$

Job Search, Overconfidence

- Are beliefs of unemployed workers right?
- Allow for individuals to have wrong beliefs on average: $\widetilde{p}(s)$ replaces s (Spinnewijn 2014)



Source: Spinnewijn (2015). Unemployed job seekers in Michigan & Maryland surveyed between 1996-1998.

Job Search, Overconfidence

- An **unemployed** worker's value function is

$$V_t^U = \max_{s_t \in [0,1]} u(y_t) - c(s_t) + \delta \left[\widetilde{p}(s_t) V_{t+1}^E + (1 - \widetilde{p}(s_t)) V_{t+1}^U \right]$$

- Important distinction:
  - Overconfidence in level ($\widetilde{p}(s) = s + o$) does not matter for search effort
  - Over/under-confidence about marginal return of effort ($\widetilde{p}'(s) \neq 1$) affects effort cost
- Clear evidence for the first form of overconfidence
- Very little known about the second (control overconfidence, **Spinnewijn, JEEA 2015**)

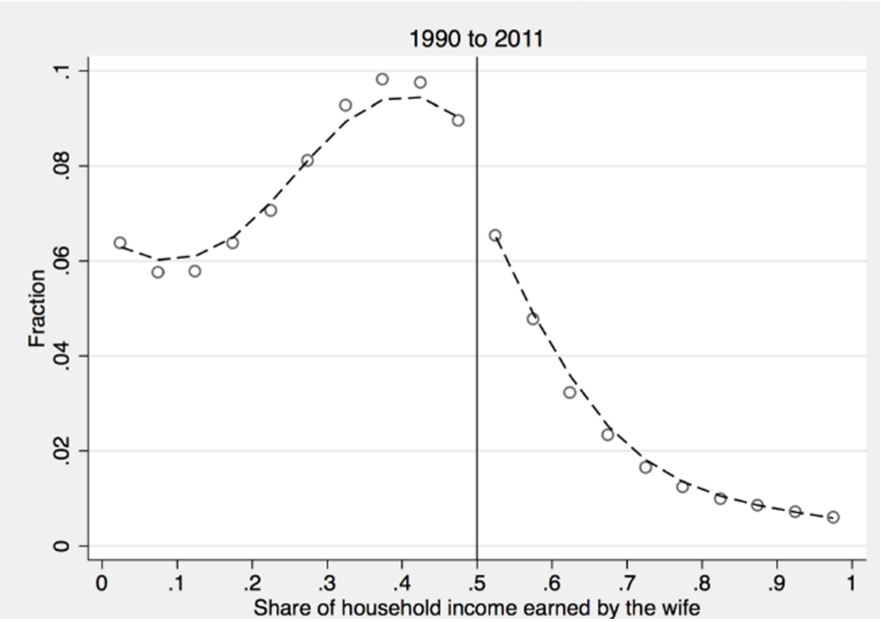
Labor Supply, High Frequency

- **(High-frequency) Labor Supply**
- Target earnings and Reference dependence: Cab drivers (Camerer et al., 1997; Farber, 2005, 2015; Crawford and Meng, 2011; Farber, 2015), Bike Messengers (Fehr and Goette, 2008)
- **Thakral and To (2019)** clarifies facts:
  - Yes, drivers more likely to stop when they earned more income, Effect size moderate overall
  - Importantly: only recent earnings (last 2-3 hours) matter, not earnings very early on in day –> Evidence on reference point formation

Labor Supply, Gender Norms

- Gender norms in Labor Supply (**Bertrand, Kamenica, Pan QJE**)
  - Husband dislikes if spouse earns more
  - Marriages less likely to occur if wife earns more

Figure II: Distribution of relative income (Census Bureau data)



- **Hermle (2019)**: What preferences exactly underlie this?

Educational Choices

- Facts on benefits of attending school:
  - Returns to school are high (10%-12%/yr of school)
  - If anything, college premium has increased over time
- Then why doesn't (nearly) everyone go?
- Active debate. Relevant behavioral factors:
  1. Excessive discounting (**Oreopoulos, 2007**)
  2. Poor information, misperceived returns to college (**Jensen, 2010; Wiswall and Zafar, 2015**)
  3. Complexity. FAFSA forms too hard (**Bettinger, Long, Oreopoulos, Sanbonmatsu, 2012**)
  4. Social norms. Acting white (**Fryer and Austen-Smith; Bursztyn, Jensen**)

Section 3

Behavioral Development

Government Intervention

- Slides from **Behavioral Development Economics,** in *Handbook of Behavioral Economics,* Vol 2), by Michael Kremer, Gautam Rao,

Topics covered (organized by development economics)

(1) Introduction

(2) **High rates of return without rapid growth (Euler equation puzzle)**

- (A) Euler Puzzle
- (B) Present bias
- (C) Reference-dependent preferences
- (D) Other behavioral factors (e.g. biased beliefs)

(3) Health

(4) Savings

(5) Risk and insurance

(6) Technology adoption

(7) Labor

(8) Firms

(9) Social preferences, culture, and development

(10) The psychology of poverty

High returns to capital in many contexts Banerjee and Duflo (2005)

- Borrowing at very high rates (70 to 100% annual rates and more)
  - Small-time fruit vendors in Chennai who borrow at daily rates of 5% (Karlan et al., 2018)
- High returns to small-business grants (de Mel et al., 2008)
- High returns to inventories (Kremer et al., 2013)
- Predictable large increases in prices between seasons (Burke et al., 2018)

Euler equation

- Suppose production function $F(K)$ with $F'(K) \geq 0$ and $F''(K) \leq 0$.
- Standard Euler equation links consumption growth to marginal return to capital:

$$u'(c_t) = \delta F'(K_t) u'(c_{t+1}) \tag{1}$$

- Implies (unrealistically) high consumption growth rates.
  - If log utility, $F'(K) = 50\%$ annually, and $\delta = 0.96$, then $\frac{\dot{c}}{c} = 44\%$.
  - If constant intertemporal elasticity of substitution utility with $\sigma = 2$, then $\frac{\dot{c}}{c} = 20\%$.
  - Still implies 38-fold consumption growth in 20 years.
- Need high "tax" or discount rate to resolve puzzle.
  - Implicit taxes due to corruption or redistributive pressures by from extended family members
  - Allowing for realistic values of such taxes does not resolve puzzle (Jakiela and Ozier (2015)).

Stochastic income and risk aversion?

- Maybe people don't invest because investments (e.g. fertilizer) are risky? Suppose income in period t is:

$$Y_t = Y_0 + \epsilon_t + \sum_{i=1}^{n} \mu_{i,t} F_i(K_{i,t}), \tag{2}$$

where n assets/capital goods, arbitrary pattern of correlation.

- Stochastic Euler equations:

$$u'(c_t) = \delta \mathbb{E}_t[\mu_{i,t} F_i'(K_{i,t}) u'(c_{t+1})], \quad i = 1, 2, ..., n \tag{3}$$

- Given initial capital stock, risk aversion will:
  (i) reduce investment in assets which co-vary positively with consumption
  (ii) increase investment in assets which co-vary negatively with consumption

But: Optimal to build buffer stock savings (Deaton, 1991; Carroll, 1997).

- If patient, risk averse, and subject to large shocks, agents want to accumulate large buffer stock savings.
  - At any one time, only a few people should have low buffer stock.
- For majority with large buffer stock, consumption should not move much with:
  - high-frequency income shocks
  - predictable income changes (e.g. seasons)
- Implies that even if returns to fertilizer highly correlated with income in season, only modestly correlated with lifetime income and thus consumption
  - Beta of fertilizer investment (correlation of return with overall consumption) will be modest, and risk aversion will only modestly reduce fertilizer investment

Model with patient consumers seems to make incorrect predictions.

- In reality:
  - Liquid buffer stocks are often modest (Deaton, 1991).
  - Consumption co-varies with income, including predictable income (Townsend, 1995).
  - Karlan et al. (2014) find that rainfall insurance increases fertilizer use.
- A model will impatient agents can create these predictions.
- Thus with either deterministic or stochastic Euler equation, matching the data requires a high effective discount rate.

High discount rates?

- Maybe $\delta = 50\%$?
- Standard exponential discounting model has only one parameter for all time horizons.
  - Euler equation typically considers short horizons (≤ 1 year).
  - In exponential discounting model, high short-run discount rate implies that distant future is discounted at extremely high rates.
- Absurd implications
  - $\delta = 0.5$ implies would not give up \$1 today for \$1 billion in 30 years.
  - No one would own land, get an education, etc.

Implications of present-biased preferences

- Predictions behavior of present-biased agents (Angeletos et al., 2001):
  - Rapidly spend down liquid assets, becoming effectively liquidity constrained
  - Build up (or hold) a stock of illiquid assets that pay off in distant future
  - Leave high rate of return investments on the table, if effectively liquidity constrained
  - Not be able to smooth consumption; consumption will co-move with income shocks, even with predictable income variation
- The sophistication of the present biased actor will determine the degree of procrastination and demand for commitment devices (O'Donoghue and Rabin, 1999, 2001).
- Implies modified Euler equation (Harris and Laibson, 2001)

Loss aversion and investment

- Shopkeepers in Kenya exhibiting greater loss aversion in experimental tasks maintain lower inventories (Kremer et al., 2013).
- Asset by asset; people may be hesitant to give up existing assets to invest in new assets, making asset allocations sticky, maybe reducing migration.
- Under loss aversion, loans collateralized with assets purchased under the loan will have high uptake and low default. (Jack et al. (2016); Carney et al. (2018)).
- Predicts stickiness of wealth rather than poverty trap:
  - Under poverty trap model, \$100 to shopkeeper $\rightarrow$ growth or fall back
  - Under loss aversion, potentially \$100 more indefinitely if unwilling to invest due to loss aversion

Topics covered

(1) Introduction

(2) High rates of return without rapid growth (Euler equation puzzle)

(3) **Health**

- (A) Under-investment in preventive health
- (B) Present bias
- (C) Biased beliefs
- (D) Incorrect mental models

(4) Savings

(5) Risk and insurance

(6) Technology adoption

(7) Labor

(8) Firms

(9) Social preferences, culture, and development

(10) The psychology of poverty

Under-investment in preventive health

- Widely studied case of under-investment in high-return opportunities: low investment in preventive health (e.g. vaccinations, deworming, bed nets, water treatment, hypertension)
- Recent literature established several stylized facts regarding health behavior in developing countries (Dupas, 2011; Kremer and Glennerster, 2011; Dupas and Miguel, 2017).
  (1) Low willingness to pay (WTP) for preventive health
  (2) High expenditures for treatments of acute conditions
  (3) High sensitivity of health investments to price and convenience

Demand for preventative health: low WTP and high price sensitivity

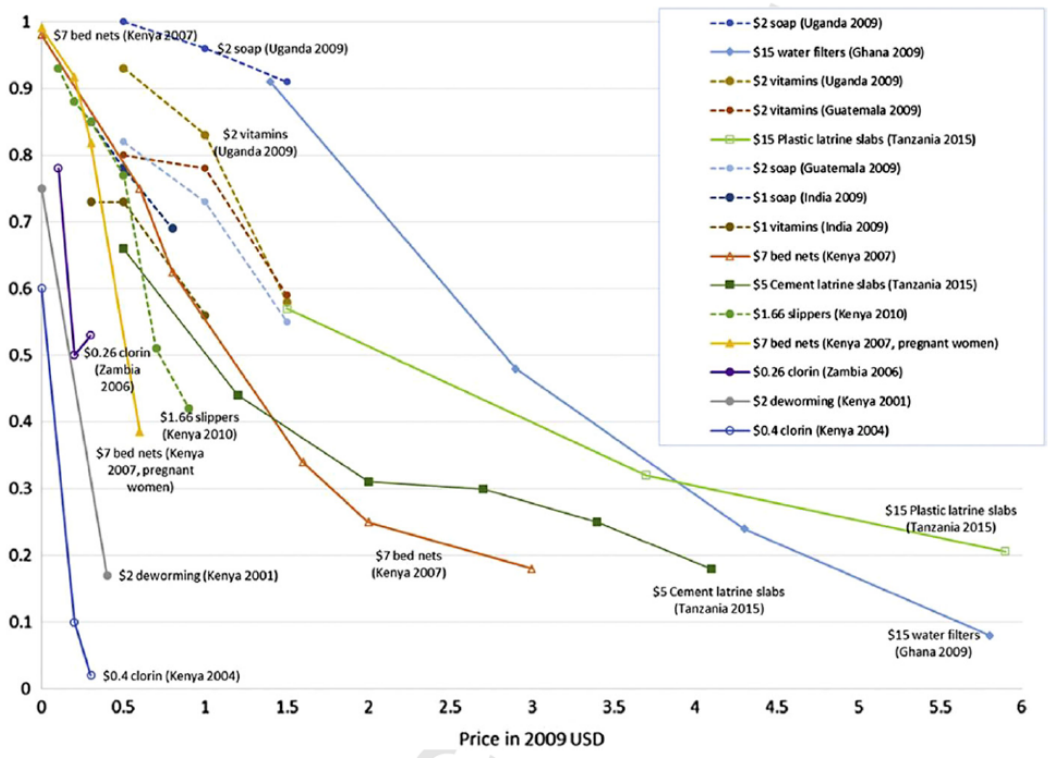


Figure: Share of individuals taking up the product as function of price (from Dupas and Miguel (2017))

High price sensitivity of demand for preventative health investments

- High price-sensitivity even in cases of substantial long-run benefits:
  - Deworming medication (Miguel and Kremer, 2004); mosquito nets (Cohen and Dupas, 2010); water treatment (Ashraf et al., 2010).
  - Example: estimated private financial benefit of deworming is $142 (Baird et al., 2016), yet $0.30 per child cost-sharing fee decreased take up 80 percent (Miguel and Kremer, 2004).
- High sensitivity also for monetary and non-monetary incentives:
  - Large impacts of small (and time-limited) incentives (lentils) for vaccination (Banerjee et al., 2010) or collecting HIV tests (Thornton, 2008)
  - Prima facie evidence against liquidity constraints (though not conclusive)
- If individuals are given more time to purchase, then lower price sensitivity, but demand still fairly sensitive to price (Dupas, 2011a).

Present bias and procrastination

- Driven by the immediate *utility costs* of the investment:
  - Examples: hassle and psychic costs of going to doctor, walking to farther-away water source, using dilute chlorine solution, changing diet, learning painful news about health status, taking medication.
  - Not financial costs unless severely liquidity constrained
- Procrastination requires both present bias and some degree of naivete.
  - Prefer to do painful task tomorrow, mis-predict that they will do it tomorrow.
- Consistent with:
  (i) effect of time-limited incentives: e.g. Banerjee et al. (2010)
  (ii) effect of reducing hassle costs: e.g. water dispensers (Ahuja et al., 2010)
- *Note:* Would not procrastinate on acute condition, since benefits immediate

Present bias and liquidity constraints

- Present bias can lead to liquidity constraints (Angeletos et al., 2001)
- Once liquidity-constrained:
  - High-return preventive investments may be left unexploited.
  - Monetary expenditures might now translate into (almost) immediate utility costs, since need to cut back on other consumption in order to, e.g. pay for doctor visit.
- Consistent with:
  - Evidence on effects of increased liquidity (Dupas and Robinson, 2013)
  - High impact of small discounts to fertilizer around time of harvest (Duflo et al., 2011)

Biased beliefs

- Making good decisions regarding health requires forming accurate beliefs about numerous variables. Difficult due to uncertainty and heterogeneity across individuals (Arrow, 1963).
- Inaccurate beliefs (e.g. misperceived returns to health investments) could help explain under-investment in health. Some evidence of inaccurate beliefs regarding health in developing societies (e.g. Delavande and Kohler (2009); Godlonton et al. (2016)).
- Information interventions appear to have large impacts on health outcomes in some contexts and small to null in others Dupas (2011); Dupas and Miguel (2017).
  - Other behavioral biases might be at play in situations of low impacts of info.
  - Motivated beliefs (e.g. deriving utility from belief that one is healthy) could matter as well.
  - More work is required to understand the determinants of success in various contexts.

Incorrect causal theories or mental models

- Individuals may interpret what they observe through the wrong causal model or theory (Schwartzstein, 2014; Gagnon-Bartsch et al., 2018).
- Incorrect mental models that may be important for health outcomes in developing societies include superstitious beliefs or beliefs in magical theories of sickness and health which include witchcraft.
- Ashraf et al. (2017) illustrate this issue in the case of maternal risk in Zambia and a wide-spread belief about martial infidelity and complications during childbirth
- Parents across the world confidently hold wrong beliefs about need to re-hydrate children in response to diarrhea. Datta and Mullainathan (2014): 30 to 50 percent of women in their sample (in India) recommended *decreasing* fluid intake of infants to treat diarrhea

Evidence against importance of some ideas from psychology in the field

- Little evidence for real-world development importance of some psychological effects frequently invoked by practitioners to justify policy:
  - **Sunk-cost fallacy:** No evidence that higher prices cause greater product use Ashraf et al. (2010); Cohen and Dupas (2010).
  - **Crowd-out of intrinsic motivation:** Little evidence that extrinsic incentives crowd out intrinsic motivations in real world development contexts or that paying more leads to substantially less-motivated workers (Dal Bó et al., 2013; Ashraf et al., 2014, 2018).

Topics covered

"Standard" barriers to saving

- Savings are necessary to self-insure against risks and to finance lumpy investments
- "Standard" barriers to savings include:
  - Lack of access to formal savings products
  - Prohibitive costs of opening a banking account etc.
- Dupas et al. (2018) find small effects of providing bank accounts to poor individuals, suggesting other (potentially behavioral) constraints may play a role in reducing savings

Commitment savings devices

- A key prediction of present bias: households accumulate few liquid savings over time, while building up substantial illiquid wealth. Consistent with savings patters across the world (Angeletos et al., 2001; Banerjee and Duflo, 2007; Morduch et al., 2009)
- Ashraf et al. (2006): evidence for demand for commitment devices in the domain of savings which evidences present-bias (as discussed in Section 3.2).
- A key open question surrounding the usefulness of commitment devices is the optimal trade-off between commitment and flexibility. Too stringent commitment reduces take-up and too flexible commitment does not overcome self-control problems.
- Dupas and Robinson (2013) find that a softer savings device increases spending on preventative care relative to a control group and a more stringent alternative.

Designing financial products for behavioral agents: Default effects

- Setting default choices is a cheap but often highly powerful tool in changing behavior.
- For instance, setting the default to automatic enrollment as opposed to non-enrollment has substantial impacts on individuals' retirement choices, particularly for lower-income individuals (Chetty, 2015; Chetty et al., 2014; Madrian and Shea, 2001)
- Blumenstock et al. (2018): setting opt-in defaults increase the savings of Afghanistan workers. Additionally, they argue the underlying mechanism involves present bias as well as the hassle costs of thinking through different options.

Designing financial products for behavioral agents: Attention

- Inattention can distort individuals' decision making in spheres ranging from savings to medical adherence and as such can have large costs.
- Karlan et al. (2016) study the impact of reminders on savings and consumption choices and find that reminders increase the salience of savings goals.
- Many reminder interventions in health (e.g. Pop-Eleches and et al. (2011))
- Potential negative externalities if attention is a limited resource. Need more evidence on whether reminders remain effective in the long term

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(10) The psychology of poverty

Low take-up of insurance

- Many people in developing countries exposed to very risky income streams (e.g. farming)
- Yet low take up of actuarially fair weather insurance (Cole et al., 2013).
  - Basis risk? (Clarke, 2016; Mobarak and Rosenzweig, 2012; Giné et al., 2008)
- Low take-up of health insurance (Thornton et al., 2010)
  - Administrative issues?

Potential explanations for low demand: Non-standard preferences

- Casaburi and Willis (2018): insurance meant to shift resources across states, yet most actual insurance contracts involve transferring resources over time
  - Eliminating the intertemporal component increases insurance take-up dramatically.
  - Important role for liquidity constraints, present bias
- Could loss aversion/prospect theory play a role?
  - Reference-dependent preferences increase risk aversion over moderate stakes and may lead thus cause *over*-insurance (Sydnor, 2010).
  - But premia might be seen as losses, thus curbing insurance demand (Eckles and Volkman-Wise, 2011).
  - Diminishing sensitivity away from reference point could lead to risk-seeking behavior in loss domain.

Potential explanations for low insurance demand: non-standard beliefs

- **Projection bias:** In good states of the world, agents may underestimate their marginal utility in bad states of the world (Loewenstein et al., 2003).
- **Recency effects:** Agents might place disproportionate weight on events from the recent past (Hogarth and Einhorn, 1992; Fuster et al., 2010; Chang et al., 2018; Karlan et al., 2014).
- **Motivated reasoning:** If individuals directly derive utility from beliefs about their future well-being, they may seek to maintain biased beliefs about their current health or the likely future state of the world.
- **Beliefs in higher powers:** Individuals' beliefs might deviate in more dramatic ways from standard probability assessments. Beliefs in higher powers might suppress insurance demand (Auriol et al., 2018).

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Technology adoption

- Various examples with apparently non-optimal technology choice:
  - Pineapple farming in Ghana, HYV seeds, seaweed pod size, fertilizer, contraceptives, soccer ball manufacturing techniques, layout of equipment in textile factories
- Do external analysts correctly understand payoffs?
- Do decision makers have adequate information?

Technology adoption: attention and complexity

- Inattention and wrong mental models (Hanna et al., 2014)
  - Production function is complex and attention is costly.
  - Individuals will pay attention to the dimensions they think are important.
  - If start off thinking something is not important (wrong mental model), will not pay attention and will never learn, even with data that would otherwise lead to revision of beliefs.
- Complexity of information
  - Provision of simplified information about seaweed pod size (Hanna et al., 2014), water safety (Bennear et al., 2013) or business practices (Drexler et al., 2014) may be more effective than providing full information.
  - Downsides of presenting simplified information: heterogeneity in population; external analysts might misunderstand decision problem

Technology adoption: present bias and loss aversion

- Present bias (Duflo et al., 2011)
  - If adoption requires costly experimentation, individuals might procrastinate since benefits are often much delayed.
  - Could benefit from simplification (if learning is costly).
  - Is there demand for commitment for technology adoption (training)?
  - Time-limited discounts around harvest highly effective at increasing take-up of fertilizer
- Loss aversion
  - Conjecture: relevant reference point when trying something new is the status quo. Possibility of losses with respect to the status quo will trigger loss aversion
  - Possibility of insurance or informal risk-sharing to improve outcomes?

Behavioral social learning

- Rational social learning will often lead society to right long-run choice if some can get past initial experimentation costs
- Banerjee (1992) herd behavior: model converges on optimal technology if:
  - observe output
  - observe size of investment
  - smooth loss function makes choices reveal signals
- Why might individuals not converge on optimal technology? We distinguish:
  (1) Barriers to sharing or seeking information
  (2) Barriers to correctly interpreting information

Barriers to sharing and seeking information: Social-image concerns

- The degree of communication between people is endogenous. Providing and soliciting information is a decision.
- People may be hesitant to ask for or provide information when doing so signals effort or ability (Chandrasekhar et al. (2018); Banerjee et al. (2018);
  - Implies seeding info more broadly can reduce learning
- People may not be willing to provide information to others for free if they paid for it or put in effort to get it.

Barriers to interpreting information: Redundancy neglect

- Benjamin (2018): review of biases in learning and errors in probabilistic reasoning.
  - Plenty of lab evidence but limited field evidence, e.g. on how non-Bayesian social learning influences technology adoption. Lots of opportunities!
- Theoretical work: imitating common sources without accounting for redundancy in the signals received can create confident and incorrect beliefs (Eyster and Rabin, 2014).
  - People may overweight the beliefs and actions of others.
- Empirical evidence of naive, non-Bayesian updating
  - People neglect the correlation of information structures resulting in double-counting of signals (Enke and Zimmermann, 2019).
  - Rather than using Bayes' Rule to evaluate the state of the world, people use a weighted average of neighbors' actions or opinions (Chandrasekhar et al., 2015)
- This may create information traps, making it hard to encourage adoption of technologies that go against conventional wisdom.

Topics covered

Distinct features of labor markets in developing economies

- Labor markets in developing economies are different to labor markets in rich countries in three key ways that make behavioral biases potentially more important:
  - High levels of informality
  - High levels of casual labor
  - High degree of self employment

Factory discipline as commitment device

- Clark (1994) argues workers want factory discipline as a commitment device.
  - Much rosier view
- Kaur et al. (2015)
  - About a third of data-entry workers choose dominated commitment contract over piece rate contract
  - Offering dominated contract increases output.
  - Substantial heterogeneity; some evidence of learning
  - With asymmetric information, firms may screen out undesirable workers with factory discipline or steep incentives, reducing overall welfare
  - Justification for legislation limiting hours, etc.?

Wage rigidities

- The share of the population employed in agriculture is much higher in poor countries than in rich countries. And most farms employ outside workers for short spells using informal contracts Kaur (2019).
- Agricultural labour markets have many features that ostensibly should make them efficient: many small buyers and sellers of labor, no formal unions and little to no enforcement of minimum wages
- Despite this, even in these decentralized informal markets, nominal wage rigidities and limited dispersion of wages across workers persist. (Kaur, 2019; Breza et al., 2018b,a).

Why do wage rigidities persist?

- Wage rigidities seem persistent even in the absence of enforced minimum wages or formal institutions like unions.
- These rigidities appear to be enforced via **social sanctions**:
  - Breza et al. (2018a): nominal wage rigidities persist in part due to workers turning down public offers of jobs with wages below the prevailing market wage which workers accept when those offers are made in private.
  - Breza et al. (2018b): when coworker productivity is difficult to observe, then introducing pay inequality reduces worker output.

Wages and incentives to do good

- **Incentives in public and non-profit sectors:**
  - Some evidence of positive effects of financial incentives on public/non-profit sector worker productivity (Duflo et al., 2012; Muralidharan and Sundararaman, 2011)
  - But providing incentives to multi-tasking agents is difficult (Holmstrom and Milgrom, 1991).
  - Additionally, financial incentive programs tend to be politically unpopular and therefore are rarely scaled by governments (Finan et al., 2017)
- **Crowd-out intrinsic motivation:**
  - Lab evidence suggests extrinsic rewards can reduce intrinsic motivation (Deci, 1971; Bénabou and Tirole, 2003)
  - But very limited field evidence of substantial crowding out (Lacetera et al., 2013)

Selection of workers

- Does offering higher wages, which might attract more talent, negatively select on the pro-social motivation of workers?
- Majority of evidence suggests no negative selection. Dal Bó et al. (2013) in Mexico and Ashraf et al. (2018), in Zambia.
- Evidence consistent with underlying correction of cognitive ability and pro-sociality (Falk et al., 2018).
- However, Deserranno (2019) finds that posting job notices with a higher implied pay attracts candidates who donate less money in dictator games, and who perceive lower social benefits to the job at the time of applying.

Female labor force participation (FLFP)

- 52% of women in poor countries participate in the labour force compared to 78% of men (Duflo et al., 2012)
- Standard explanations emphasize biological reasons which, it is typically argued, engender differences in the specialization of the sexes between wage work and domestic work.
- Leaves much of the variation in FLFP unexplained, even conditional on income per capita.
- Behavioral explanations include:
  - Low self-efficacy (McKelway, 2018)
  - Social norms suppressing FLFP (Bursztyn et al., 2018a)

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Behavioral firms

- Is it reasonable to assume firms (as opposed to individuals) make choices that maximize profits? Are there reasons to believe firms in developing economies are more behavioral?
  - Here: broad definition of "behavioral": deviations from profit maximizing behavior
- Lucas (1978) span of control model and Chicago critique of behavioral economics:
  - Behavioral firms will be weeded out of the market.
  - Even if only 5% of people don't have behavioral biases, they will become managers of firms.
- Distortions in developing countries prevent efficient firms from growing and displacing less efficient ones.
- Self-employed individuals in developing countries are not just behavioral consumers, they are behavioral firms – or at least behavioral managers.

Reasons developing economy firms could be more behavioral

(1) Lower competitive pressures due to:

(i) Import restrictions

(ii) Restriction of new entrants into markets based on regulation, financial constraints, and agency problems

Reasons developing economy firms could be more behavioral (cont'd)

(2) Smaller firm sizes which limit the scope for within-firm competition that causes non-behavioral agents to rise to management:

(i) Smaller firm sizes as discussed in the previous chapter potentially due to:

- Taxation and regulation (e.g. labor regulation), predation
- Credit market issues (But profitable firms should grow over time?)
- Correlation between firm size and family structure (Ilias (2006); Bertrand et al. (2008))
- Difficulty of cooperation?

(ii) Implications

- Firms may only replace self employment when productivity advantage becomes large enough to outweigh these costs.
- Reduces ability of innovations to spread, incentives to innovate
- Reduces replacement of inefficient producers

Behavioral firms: low levels of trust

- Once we start considering behavioral biases in firm decision-making, many unexplored and potentially important areas of research arise.
- Example: Low levels of trust and missing firm growth:
  - Firms in developing countries are small and standard explanations do not completely account for just how small these firms tend to be.
  - Low levels of trust associated with smaller firm sizes Cingano and Pinotti (2012); Algan and Cahuc (2014)
  - Non-Western countries are more likely to emphasize loyalty to one's group (Haidt, 2013), which might in turn limit cooperation with out-group members.

Behavioral firms: management practices

- Improved management practices have been shown to increase firm profitability in developing country contexts (Bloom et al., 2013; Bruhn et al., 2018).
- Why are such services not demanded and offered more?
- Firms that fail to adopt these profitable practices are not necessarily weeded out of the market.

New research horizons associated with behavioral firms

- Lots of unexplored areas waiting to be explored:
  - The nature of the objective function of small (family) businesses
  - Demand forecasting/estimating by firms
  - Optimality of pricing or product choices amongst firms
  - Inventory management
  - Firm labor and capital-investment decisions
  - Technology adoption

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Trust, cooperation, and development

- Trust and cooperation important for economic and political outcomes
  - e.g. Algan and Cahuc (2014) review
- Developing countries have lower levels of trust and positive reciprocity
  - Falk et al. (2018) using global survey
- Is this a cause or consequence of development?

Trust, cooperation, and development (cont'd)

- Good reasons to think that variation in trust and reciprocity have deep historical roots
  - Enke (2018): historical tightness of kinship predicts modern-day in-group favoritism, willingness to cheat on and distrust outsiders, local rather than broader institutions.
  - Nunn and Wantchekon (2011): long-term consequences of slave trade
  - Henrich et al. (2010): evolution of fairness and punishment facilitated trust and cooperation, allowing for large-scale societies
    - E.g., moralizing gods and cooperation with strangers?
    - Market integration and fairness; community size and punishment
- But likely also in part a consequence of development, e.g. market exposure and well-functioning legal institutions might themselves increase trust.

Social image and norms

- Frontier of behavioral research on (pro)social behavior is on social image
  - Desire to conform to social norms
  - And also to impress (in socially sanctioned ways)
  - Visibility of actions can matter a great deal
- Some recent applications
  - Bursztyn et al. (2018b) on conspicuous consumption in Indonesia
  - Chandrasekhar et al. (2018, 2015); Banerjee et al. (2018) on social learning
- Much more work to be done in developing-country settings
  - Including on how norms change, e.g. gender norms

Shaping social preferences and norms

- Important to understand policies which can improve inter-group behaviors
  - Rao (2019) on integration in schools
  - Blouin and Mukand (2017) on post-conflict Rwanda
  - Lowe (2018) on different types of contact
  - Okunogbe (2018) on consequences of national service in Nigeria
  - Miguel (2004) on national identity in Tanzania
  - Role of policy and culture (Miguel and Gugerty, 2005)
- And policies which can influence certain social norms
  - La Ferrara et al. (2012); Jensen and Oster (2009): TV effects on fertility, gender attitudes
  - Bursztyn et al. (2018a) on female labor force participation in Saudi Arabia

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Scarcity and cognitive function

- Mullainathan and Shafir (2013) argue that poverty impedes cognitive function through scarcity. They argue scarcity engenders an increased focus on money and as such the "bandwidth" available for other tasks is reduced.
- Mani et al. (2013): empirical evidence in support of this hypothesis
  - Lab study: inducing thoughts about money lowered the cognitive function of the poor and not the wealthy.
  - Complementary field study exploited within person variation; sugar cane farmers in India had significantly worse cognitive performance before harvest as in contrast to right after harvest.
- Potentially very important results but methodological limitations (e.g. potential learning effects in second study) and (so far) lack of successful replications
  - Carvalho et al. (2016): no differences in cognitive function and decision-making around payday among US workers

Conclusion

- Ideas from behavioral economics help explain important puzzles in development, with important limitations
- Taking behavioral development economics seriously will involve testing specific mechanisms and providing calibrations and estimations where possible (DellaVigna, 2018).
- Many unanswered questions remain and we hoped to have pointed at some of those in the preceding slides. So much more exciting work to be done!
- We did not cover some important topics in development to which behavioral economics may be fruitfully applied (e.g. education, political economy, economics of the family).

Section 4

Welfare Response to Biases

Government Intervention

- Room for government/social planner intervention?
  - No if:
    - Sophistication about biases
    - Markets to correct biases exist
  - Yes 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 $\rightarrow$ 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 Naiveté $\rightarrow$ 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 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
	Joined SMarT (N=615)	Did Not Join SMarT (N=3,197)	Joined SMarT (N=165)	Did Not Join SMarT (N=1,840)	(N=5,817)
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

	Employees Who Were Already Saving in December 2001		Employees Who Were Not Saving in December 2001		
Date	Joined SMarT	Did Not Join SMarT	Joined SMarT	Did Not Join SMarT	All Employees
	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 (%)

	Age			
Income	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)

- SMarT 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)**: EITC take-up
  - One of the earliest large-scale nudge interventions
  - Rich design with many arms, on important outcome
  - Example to follow

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

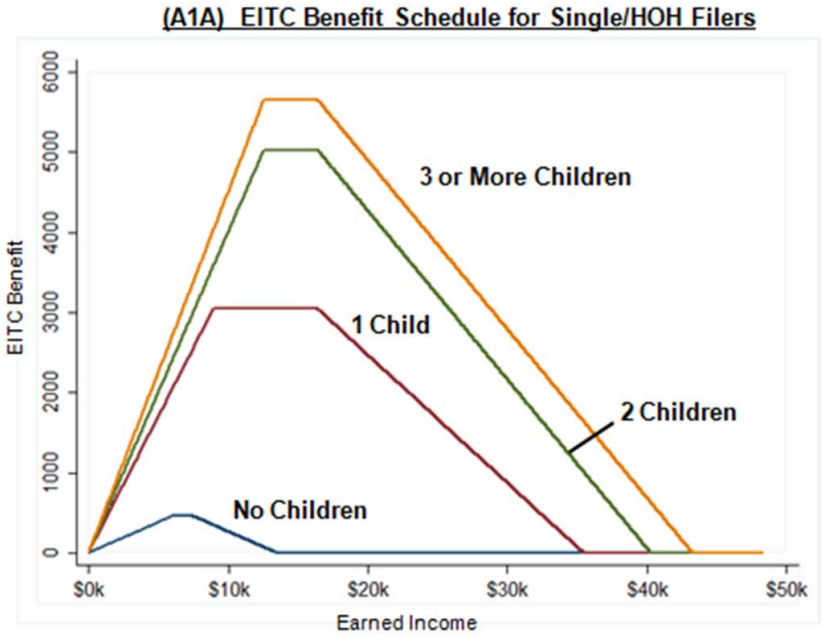
- **25% of eligible do not take-up (~6.7m).** Of 25%, 16% do not file taxes, and 9% files taxes (~2.3 m) (Plueger 2010). 9% is focus of this study

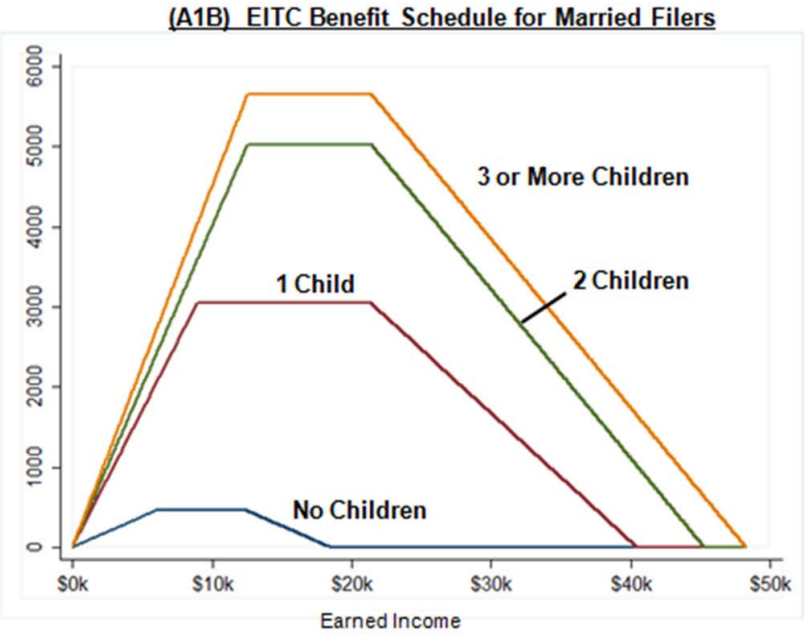
- (Many) filing non-claimants receive a reminder notice / claiming worksheet (CP 09 or CP 27) from IRS

- **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

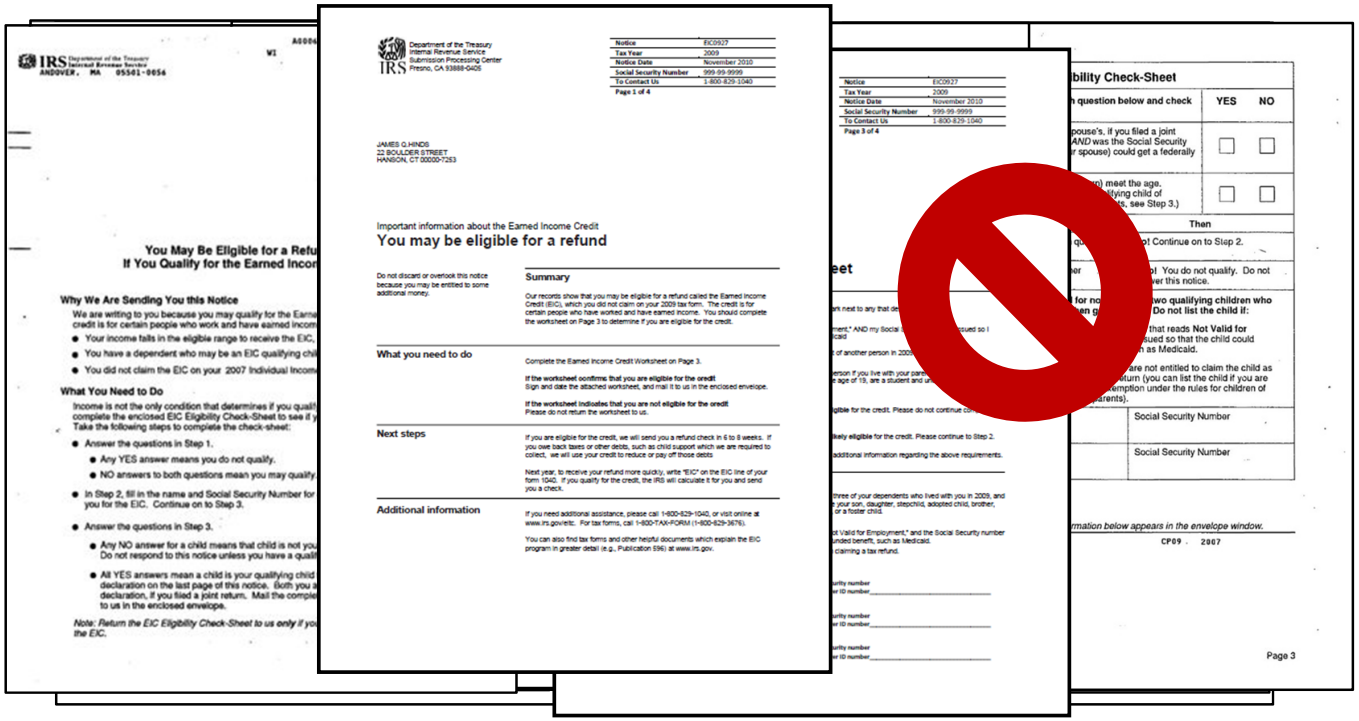
Survey of perceived incentives. Surveys of ~1200 low to moderate income taxpayers to assess perception of EITC cost/benefit parameters

Psychometric scoring of interventions. Second survey with ~2800 subjects illuminates psychological mechanisms underlying experimental response

EXPERIMENT CONTEXT – ILLUSTRATIVE TIMELINE

2009 **2010**

Jan to Dec	Feb	March	May	Nov
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)**



ORGANIZATION OF TREATMENTS I

Table 3

EXPERIMENTAL INTERVENTIONS BY MECHANISM

MECHANISM	INTERVENTION	DESCRIPTION	SAMPLE
Informational Complexity			
Simplicity / Complexity (Design)	1. Simple Notice	Relative to complex (original CP) notice, "simple" single-sided notice has simplified layout and exlcudes 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
Program Information			
Benefit and Cost Information	1. Benefits (Low and High)	Simple notice reports upper bounds of benefit range	6,761
	2. Transaction Costs (Low and High)	Simple notice provides guidance as to worksheet completion time	3,475
Penality/Audit Information	1. Indemnity Message	Worksheet with message to indemnify against penalty for unintentional error	17,027
General Program Information	1. Attention Envelope	Envelope with message indicating enclosed information is "good news"	17,044
	2. Informational Flyer	One page flyer offers program information and trapezoidal benefit schedule	4,019
Program Stigma			
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)

Headline describing purpose of notice

Summary of the notice and program

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

Instructions for eligibility worksheet; very exclusionary language

Department of the Treasury
Internal Revenue Service
Submission Processing Center
Fresno, 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 Q.HINDS
22 BOULDER STREET
HANSON, CT 00000-7253

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 income. This tax credit usually means more 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.

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lifying Child of More than One Person

so a qualifying child of another person, you and the other person can decide who hat child. If more than one person claims the credit using the same child, the IRS reaker rules to determine which person can claim the credit with that child.

If	Then Only
child's parent,	The parent can treat the child as a qualifying child.
hild's parents and they together,	The parent with whom the child lived the longest during the year can treat the child as a qualifying child.
hild's parents, the child the same amount of nd the parents do not er,	The parent with the highest adjusted gross income can treat the child as a qualifying child.
hild's parent,	The person with the highest adjusted gross income can treat the child as a qualifying child.

ted *EIC Eligibility Check-Sheet*, we will review the information you provide. If you end you a refund within the next six to eight weeks (if you owe no other amounts We will send you a letter of explanation if you do not qualify for the credit.

Year

come credit faster if you are eligible, and avoid getting a notice next year by doing next Federal Income Tax return:

EIC amount on your return. The instruction booklets for Form 1040 and Form ns on how to figure your EIC.

e EIC for you by:

earned income credit line.

ching Schedule EIC for a qualifying child. *Remember, you do not need to claim a t to receive the EIC.*

- Write "NO" on the EIC line of your return if you do not want or do not qualify for the credit.

How to Get More Information

To learn more about the EIC, visit www.irs.gov/eitc or call 1-800-829-1040. Go to this website and click on the interactive EITC Assistant (available in English and Spanish) to see if you qualify. You can get *Publication 596, Earned Income Credit (Publicación 596(SP)* para la versión en español) by calling 1-800-829-3676 or by downloading it directly from www.irs.gov.

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

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JAMES Q.HINDS
22 BOULDER STREET
HANSON, CT 00000-7253

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/eitc. 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.

"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

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INTERNAL REVENUE SERVICE
Submission Processing Center
Fresno, CA 93888-0405

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 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/eitc 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, stepbrother, stepsister, 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_____

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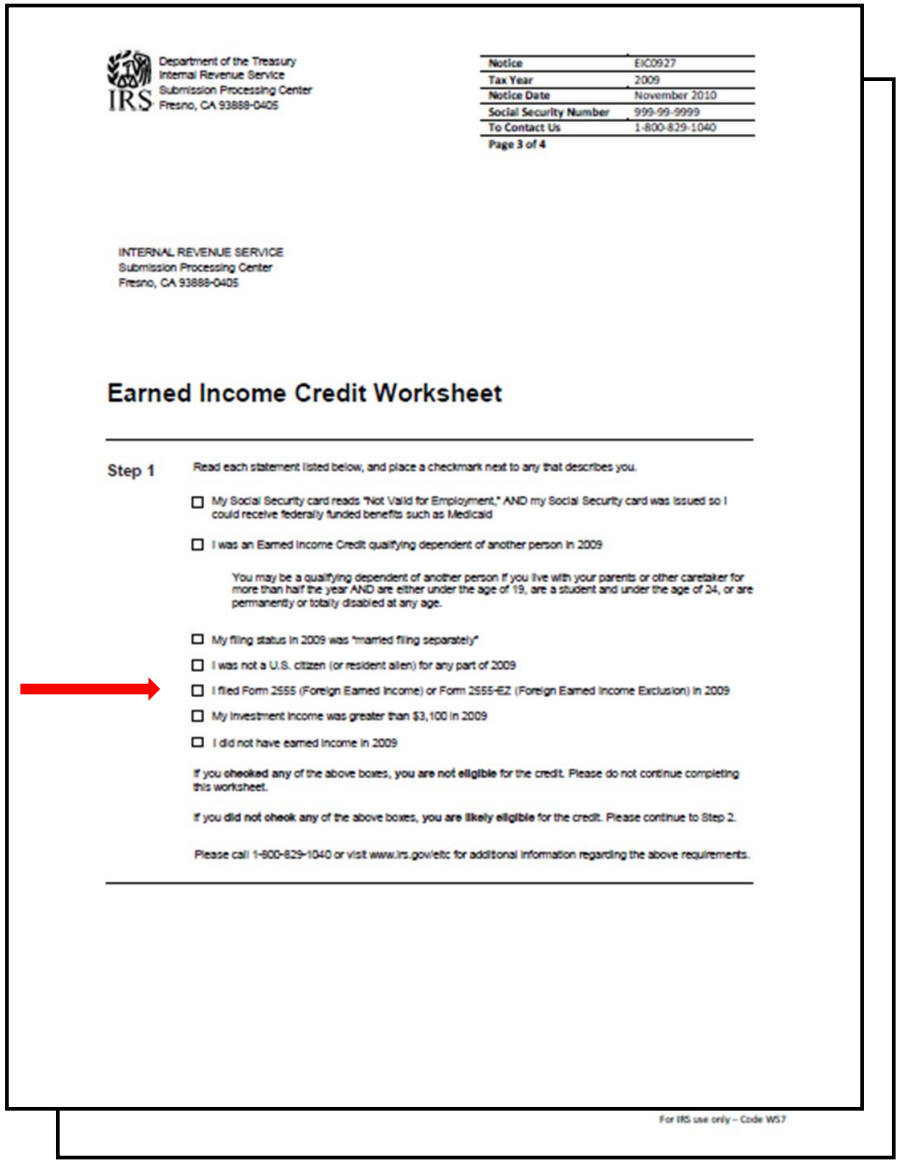
SIMPLE WORKSHEET

- 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



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INTERNAL REVENUE SERVICE
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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.
- ☐ 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-EZ (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/eitc for additional information regarding the above requirements.

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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

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JAMES Q.HINDS
22 BOULDER STREET
HANSON, CT 00000-7253

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), which 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 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/eitc. 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.

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

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JAMES Q.HINDS
22 BOULDER STREET
HANSON, CT 00000-7253

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 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.

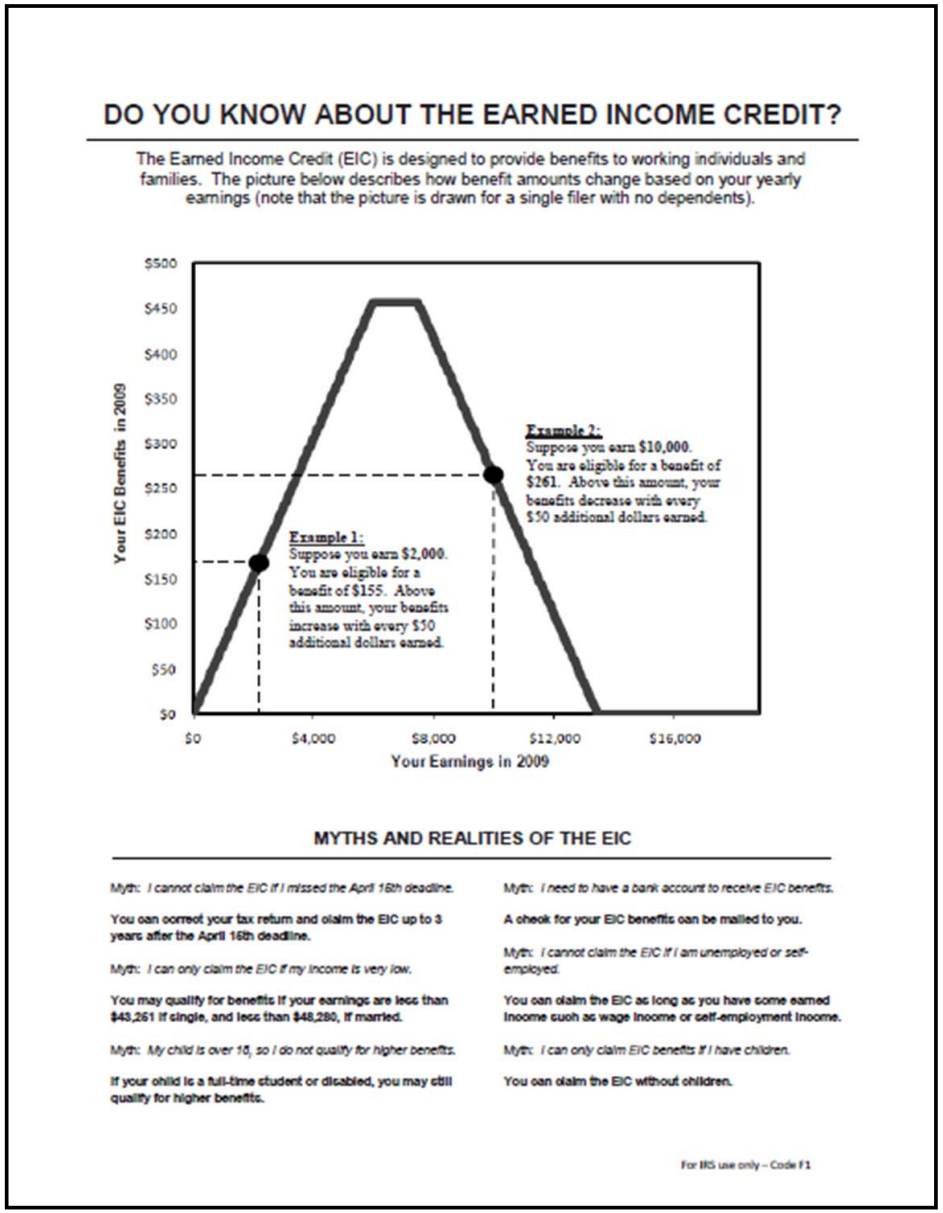
Additional information

If you need additional assistance, please call 1-800-829-1040, or visit online at www.irs.gov/eitc. 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.

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 16th deadline.

You can correct your tax return and claim the EIC up to 3 years after the April 16th 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 $43,261 if single, and less than $48,280, if married.

Myth: My child is over 16, 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.

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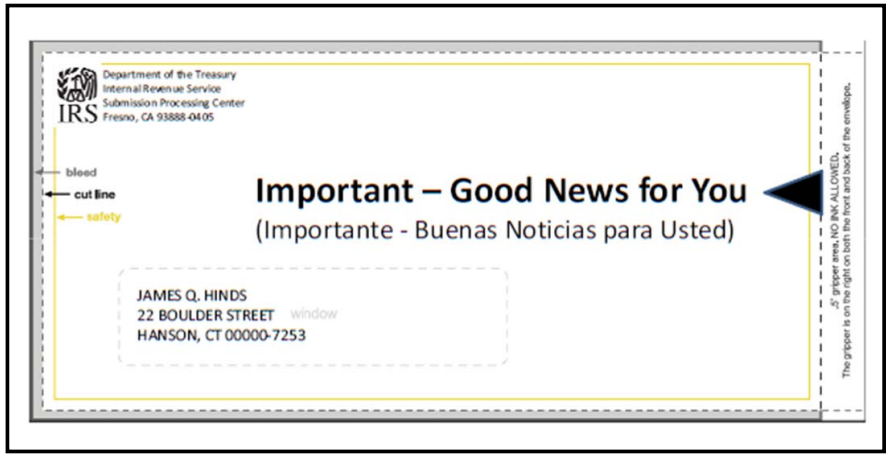
INFORMATIONAL FLYER

- 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."

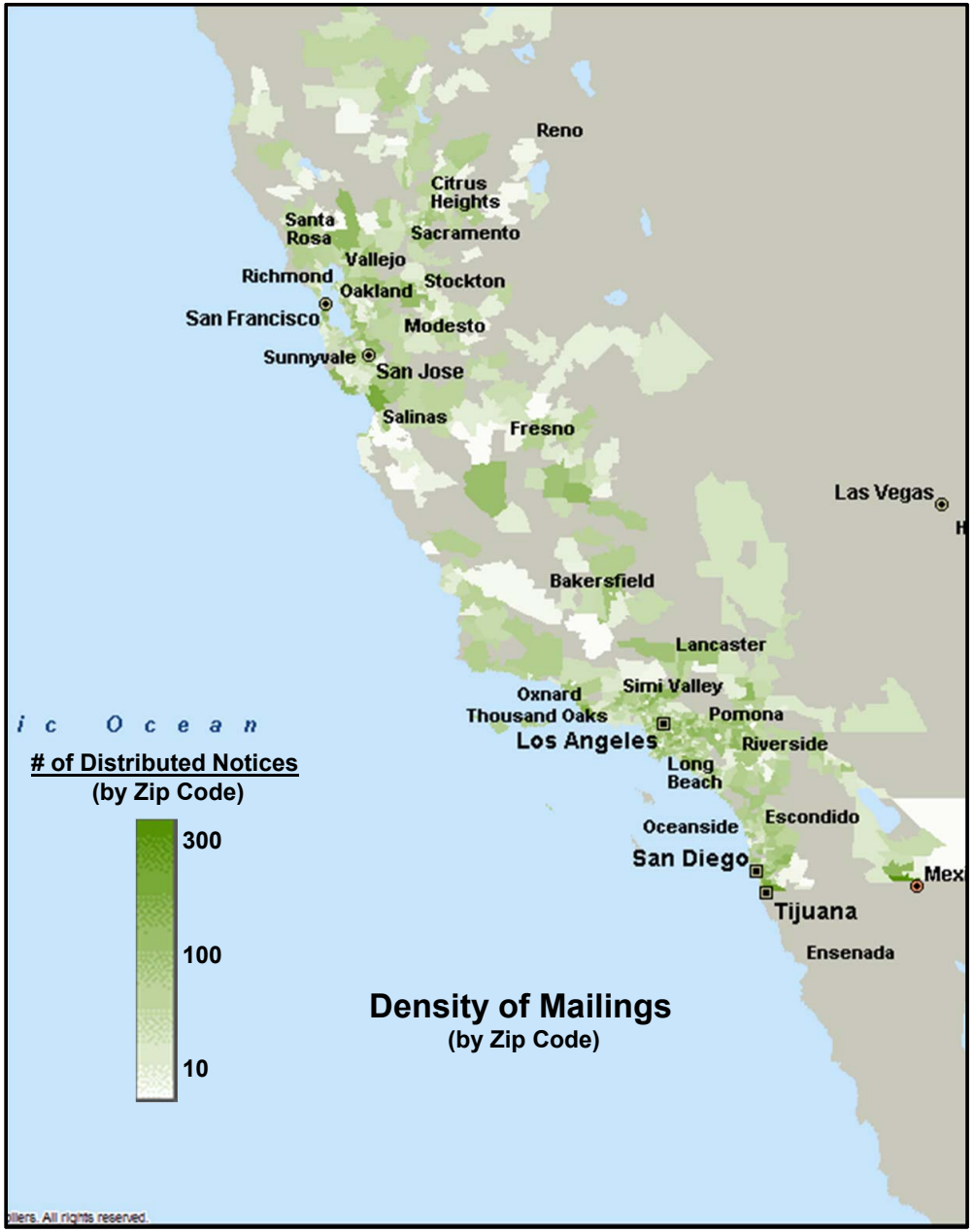
Notice Headline for Intervention 1

"You may be eligible for a refund due to all your hard work."

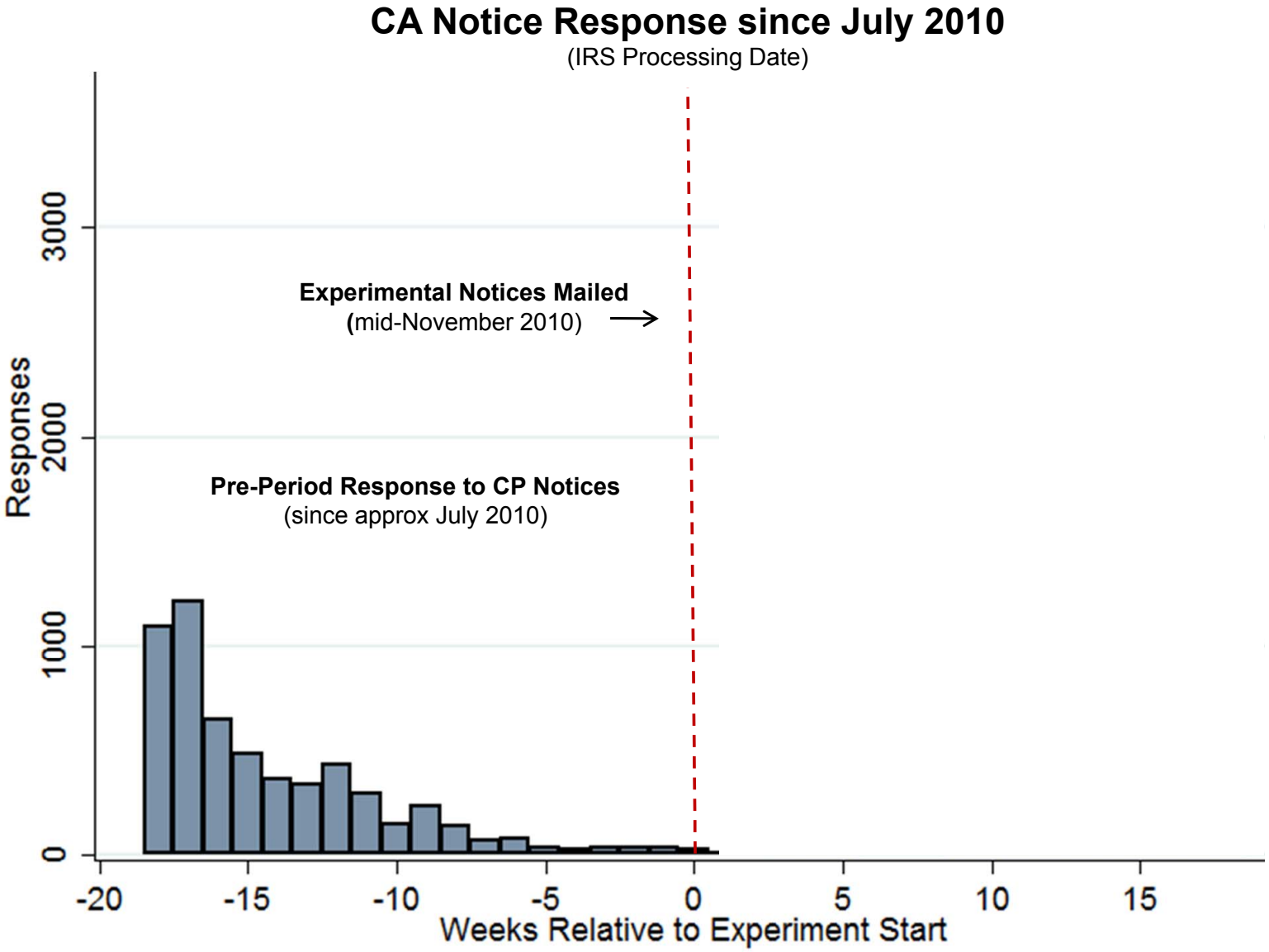
Notice Headline for Intervention 2

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

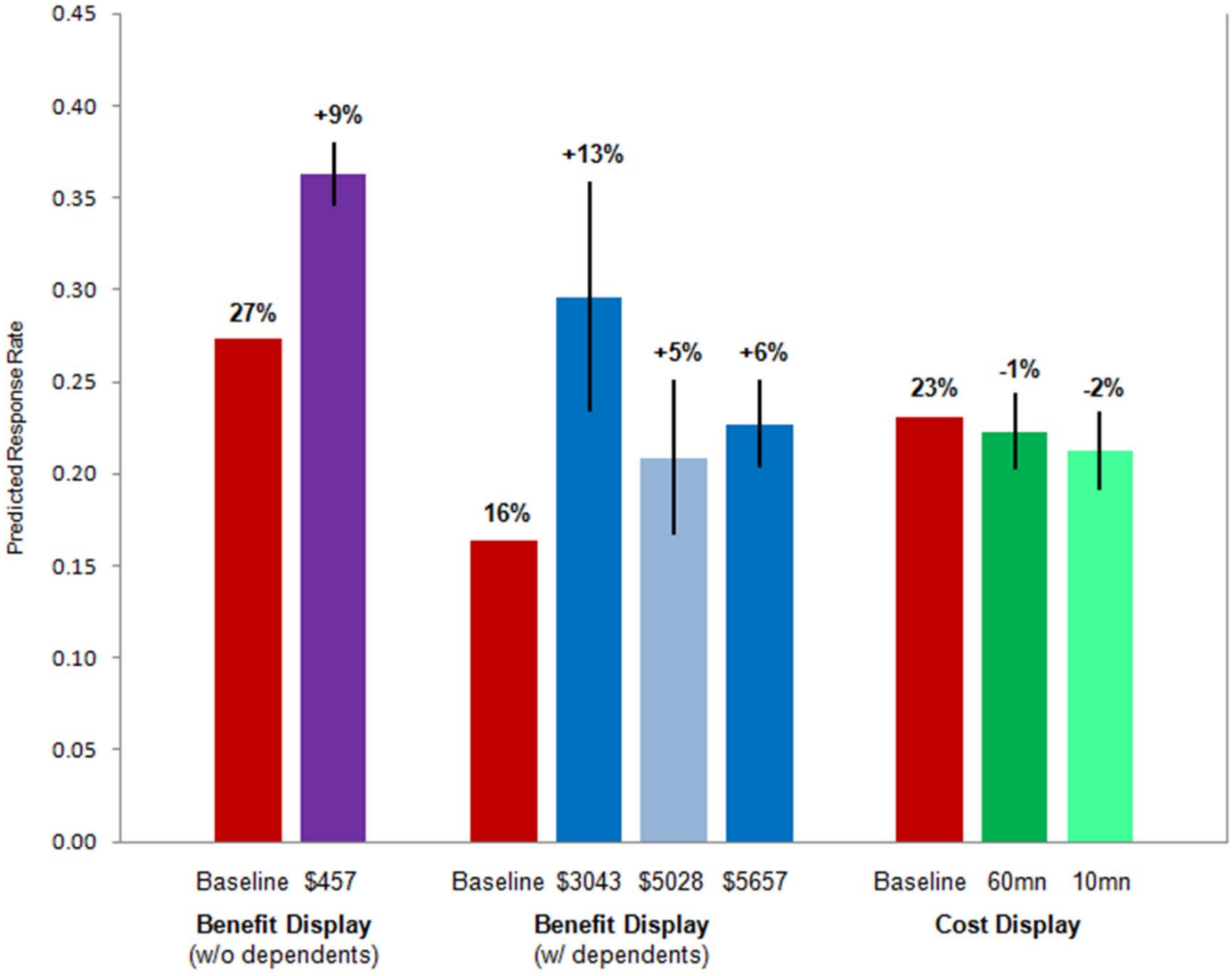
Response and Denial by Experimental Treatments

RESPONSE AND DENIAL BY EXPERIMENTAL TREATMENTS

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

Stigma Interventions						
Personal Stigma Reduction	-0.007	-0.009	-0.012	0.001	0.0003	0.0004
	(0.011)	(0.011)	(0.014)	(0.016)	(0.0000)	(0.0000)
	[-3%]	[-4%]	[-4%]	[+1%]		
Social Stigma Reduction	-0.048***	-0.046***	-0.047***	-0.037**	-0.0002	-0.0002
	(0.011)	(0.010)	(0.013)	(0.015)	(0.0000)	(0.0000)
	[-21%]	[-20%]	[-17%]	[-23%]		
Fixed Effects, I(Deps)	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 +	0.14	0.14	0.17	0.10		
P-value of F-Test - Complexity Interve	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 Interventior	0.00	0.00	0.00	0.11	0.96	0.77

Predicted Response for Benefit and Cost Notices



Section 5

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 young behavioral economists have Berkeley training:
     - Harvard (Gautam Rao)
     - MIT (Frank Schilbach)
     - Chicago (Devin Pope + Avner Shlain now)
     - Princeton (Anne Karing now)
     - LSE (Kristof Madarasz, Matthew Levy)
     - UCSB (Erik Eyster, Youssef Benzarti)
     - CMU (Saurabh Bhargava),
     - Wisconsin (Justin Sydnor),....
   - Many students with (quasi-)behavioral paper on the market show lack of behavioral training (eg, development papers with experiments in tow)
   - Show off your Berkeley 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!