Experiments in Labor

Ec1058: Experimental Economics
March 26, 2018
Stephanie D. Cheng
What is labor economics?

- **Definition:** Studies economic behavior of employers and employees in response to prices, profits, wages, etc.

- **Some Questions of Interest:**
  - What factors affect an employee’s decision to work?
  - Why do individuals choose one job over another?
  - What improves the likelihood of finding a job?
Labor & Experiments

- Historically, difficult to run:
  - Expensive
  - Unfair?
  - Contamination

- Technology makes it (somewhat) easier
  - Easier to hire: Ex. Amazon, Upwork
  - Easier to get data: Ex. Monster, LinkedIn, Glassdoor
Outline

- Introduction
- What factors affect an employee’s decision to work?
  - Evidence: Income Maintenance Experiments
- Why do individuals choose one job over another?
  - Evidence: Mas & Pallais (2007)
- What improves the likelihood of finding a job?
  - Evidence: Crepon et. al. (2013)
- Conclusion
Does A Universal Basic Income Discourage Work?

48% of Americans support universal basic income for workers displaced by A.I.

Does the Social Safety Net Make Us Lazy?

Do social-welfare programs make us complacent or confident enough to take new risks, such as starting a business.

By Noah Smith

January 26, 2015, 3:04 PM EST
Income Maintenance Experiments

- Conducted by Office of Economic Opportunity
- One of earliest large scale social experiments
  - 1968-1982
  - 4 areas: NJ, Rural, Gary (IN), Seattle-Denver
  - 8,746 low-income households
  - Total cost: ~$100 mil (~$258 mil today)

Q: How does negative income tax affect labor supply?
What is Negative Income Tax?

- **Definition:** Low-income get paid subsidy by gov, instead of paying taxes
  - Guarantee $g$: Subsidy $s$ when earned income $y_0 = 0$
  - Tax rate $t$: Rate subsidy $s \downarrow$ as earned income $y_0 \uparrow$
  - Subsidy $s$: $g - t \cdot y_0$

- **Example:** $g=1,000; t=50$
  - Earn $0; s=1,000; s + y_0 = 1,000$
  - Earn $1,000; s=500; s + y_0 = 1,500$
  - Earn $2,000; s=0, s + y_0 = 2,000$ (breakpoint)
New Jersey Experiment

- **Sample:** Urban, working poor households
  - 1+ male<65, 1+ other person, income<150% poverty
  - Trenton, Paterson, Passaic, Jersey City, Scranton (PA)
  - Initially 724 experimental, 489 control

- **8 treatments:**
  
<table>
<thead>
<tr>
<th>Tax Rates</th>
<th>Guarantee Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>30%</td>
<td>A</td>
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<tr>
<td>50%</td>
<td>B</td>
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<tr>
<td>70%</td>
<td>E</td>
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<td>50%</td>
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<td>75%</td>
<td>D</td>
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<td>100%</td>
<td>F</td>
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<tr>
<td>125%</td>
<td>H</td>
</tr>
<tr>
<td>100%</td>
<td>G</td>
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</table>
Methodology

1. Screening, pre-enrollment interviews
2. Random assignment
3. Start payments
4. Collect data
   - Income reports: Experimental, every 4 weeks
   - In-person interviews: Both, every 3 months
5. Code data by hand on punch cards
Signs of Issues?

- Threats to randomization: Ethnicity differences
  - Added 141 new control families
- Attrition: 7.7% experimental, 11.9% control 1 yr in
  - ↑ payments for reporting income to ↑ retention
- Contamination: Other welfare benefits
  - Initially: Report other welfare payments
  - Later: Choose between two
- Misreporting: Individually reported income

(Note: Alarm bells should be going off!)
Moving onto other locations

  - Add female, >65 heads of households
  - 5 treatments:

- Gary (IN): 1971-1974, N = 1,780
  - Urban, black households
  - 59% female family heads
  - 4 treatments:

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>50%</td>
<td>75%</td>
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<tr>
<td>30%</td>
<td>C</td>
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<tr>
<td>50%</td>
<td>B</td>
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<tr>
<td>70%</td>
<td>B</td>
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<table>
<thead>
<tr>
<th>Tax Rates</th>
<th>Guarantee Levels</th>
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<tbody>
<tr>
<td>40%</td>
<td>A</td>
</tr>
<tr>
<td>60%</td>
<td>B</td>
</tr>
</tbody>
</table>
Moving onto other locations

  - Add length: 3 yrs vs. 5 yrs (later vs. 20 10 yrs)
  - Add declining tax rates (2.5pp for $1000 ↑)
  - Add counseling/training subsidies

- 11 NIT treatments:

<table>
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</thead>
<tbody>
<tr>
<td>50% A</td>
<td>E</td>
</tr>
<tr>
<td>70% B</td>
<td>F</td>
</tr>
<tr>
<td>70% (declining) C</td>
<td>G</td>
</tr>
<tr>
<td>80% (declining) D</td>
<td>H</td>
</tr>
<tr>
<td>92%</td>
<td>J</td>
</tr>
<tr>
<td>115%</td>
<td>K</td>
</tr>
<tr>
<td>135%</td>
<td></td>
</tr>
</tbody>
</table>

- Additional Issues: ↑ low(high)-income in low(high)-cost plans; design changes
Results

Pooling all treatments together...

Table 2
Changes in Hours and Earnings in Four Negative Income Tax Experiments
(Percentage changes in parentheses)

<table>
<thead>
<tr>
<th>Experiment</th>
<th>Husbands</th>
<th>Wives</th>
<th>Single female heads of families</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hours per year</td>
<td>Annual earnings</td>
<td>Hours per year</td>
</tr>
<tr>
<td>New Jersey</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>-99 (-5.6)</td>
<td>+10 (+0.1)</td>
<td>-73 (-30.6)</td>
</tr>
<tr>
<td>Black</td>
<td>+36 (+2.3)</td>
<td>+1,180 (+9.3)</td>
<td>-5 (-2.2)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-10 (-0.7)</td>
<td>+800 (+6.4)</td>
<td>-99 (-55.4)</td>
</tr>
<tr>
<td>All b</td>
<td>-21 (-1.2)</td>
<td>+690 (+5.3)</td>
<td>-56 (-24.6)</td>
</tr>
<tr>
<td>Rural c</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>+40 (+1.8)</td>
<td>-590 (-4.8)</td>
<td>-88 (-21.1)</td>
</tr>
<tr>
<td>Black</td>
<td>-152 (-8.0)</td>
<td>-630 (-6.8)</td>
<td>-268 (-31.3)</td>
</tr>
<tr>
<td>All</td>
<td>-56 (-2.8)</td>
<td>-610 (-5.7)</td>
<td>-178 (-27.9)</td>
</tr>
<tr>
<td>Gary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black</td>
<td>-114 (-6.5)</td>
<td>-830 (-5.0)</td>
<td>+14 (+5.0)</td>
</tr>
<tr>
<td>Seattle-Denver</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>-144 (-7.6)</td>
<td>-1,310 (-7.5)</td>
<td>-107 (-17.1)</td>
</tr>
<tr>
<td>Black</td>
<td>-169 (-9.5)</td>
<td>-930 (-5.9)</td>
<td>-153 (-16.0)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-231 (-11.5)</td>
<td>-510 (-3.0)</td>
<td>-147 (-28.7)</td>
</tr>
<tr>
<td>All</td>
<td>-164 (-8.8)</td>
<td>-1,070 (-6.4)</td>
<td>-128 (-17.9)</td>
</tr>
<tr>
<td>3-year Sample</td>
<td>-133 (-7.1)</td>
<td>-810 (-4.8)</td>
<td>-101 (-14.2)</td>
</tr>
<tr>
<td>Weighted average d</td>
<td>-119 (-7.0)</td>
<td>-650 (-4.0)</td>
<td>-93 (-17.0)</td>
</tr>
</tbody>
</table>
Interpretation

- ↓ in working hours, earnings
  - On average, men: 7% ↓ in hrs; women: 17% ↓ in hrs

- Separate effects of g, t?
  - Hugely controversial: Over 340 papers written
  - “The experimental results seem to be a political Rorschach test in which an observer’s conclusions reveal more about the observer than about the observed.” - Widequist (2005)
The pitfalls of poor design

- Lack of clear goals
  - What’s an acceptable decline in work?
- Treatment selection
  - Focused on policy, not research relevance
- Administrative issues
  - No time to learn from “pilot” studies
- Too much tweaking
  - Questionable changes during study

All make it harder to interpret results!
Was it worth it?

- $258 mil to learn: give people $, work less
  - How much inform policy?
  - Was it unfair?

- More important: lessons learned
  - Large scale experiments possible!
  - Informed future methodologies
Forget Raises, Companies Are Turning to $1,200 Cribs to Woo Talent

The latest salvo in the benefit wars is a baby-lulling machine that promises parents more of their most precious resource—sleep.

By Rebecca Greenfield
February 28, 2018, 5:00 AM EST
Why offer employee benefits?

- Encourages applicants to join company
- Often cheaper than increasing salaries

Q: How much are applicants willing to trade a salary increase for non-monetary benefits?

Mas & Pallais (2017): Focus on work flexibility
Experiment Setting

- Applicants for national call center
  - Job description: Telephone interviewer positions for surveys related to study of labor markets
  - i.e. work on authors’ other projects!

- **Sample:** 3,245 applicants in 68 large metro areas
  - Not representative: Mostly female, 30 yrs or under, HS/some college
Experimental Setup

1. Advertise on national U.S. job search platform
   - i.e. Craigslist
   - No info about schedule, location, or duration
Experimental Setup

2. Ad directs to call center’s website
   - Shown: Center mission, personnel
   - Not shown: university affiliation, this project
   - Feedback from applicants: “website looked like those of a regular employer”

3. Start application: create account
   - Required: Contact info, YOB, zip code
   - Voluntary: race/ethnicity, gender, education, 6 quantitative questions → differential effects
Experiment

4. Offered choice:
   - **Baseline**: 40 hrs/wk, M-F 9-5
   - **Randomized treatment**:
     1. Choose own 40 hr schedule
     2. Choose # hrs worked
     3. Work from home
     4. Choose # hrs & schedule
     5. Employer chooses schedule

Tell us which of the following two positions you prefer. The type of work is the same in both jobs. Please click on each job title in order to review the work descriptions.

It is important that you read the position descriptions carefully so you can indicate your preference below.

### Positions

**Phone Survey Associate Position #309 (click for description)**

This is a phone survey position.
The position is 40 hours per week.
This is a M-F 9 am - 5 pm position. The work is exclusively on-site in downtown Albany. This position pays 19.00 dollars per hour.

**Phone Survey Associate Position #468 (click for description)**

This is a phone survey position.
The position is 40 hours per week.
You can make your own schedule. This can be a M-F 9 am - 5 pm schedule or other days and times. The work is exclusively on-site in downtown Albany. This position pays 18.00 dollars per hour.

If you were selected for both positions, which one would you prefer? Write your preferred position number in the box below. (Regardless of your choice, you will be considered for all open positions.) Your choice will not affect whether you receive a job offer. It will only be reviewed after hiring decisions have been made.) If you are not interested in either position, simply click on "No thanks, this isn't for me."
Experiment

4. Corresponding wage:
   - Randomly 1 option: max wage
   - Other option: random increment lower than max wage
   - Increments: $0, $0.25, $0.50, $0.75, $1, $1.25, $1.50, $1.75, $2, $2.25, $2.50, $2.75, $3, $4, $5

5. Applicant chooses preferred option
   - Told won’t affect job offer
Calculating Willingness to Pay

- For each $\Delta w$, calculate % prefer job w/h benefits
  - Fitted line: CDF of individuals’ willingness to pay
  - Read off WTP from y-axis

![Figure 2. WTP for Flexible Number of Hours](image)
Results

Most → least valued
1. Not employer chooses
2. Work from home
3. Choose # hrs, schedule
4. Choose schedule
5. Choose # hrs

Higher female WTP to avoid employer discretion, for work from home

Table 5. Willingness to Pay for Alternative Work Arrangements

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>25th</th>
<th>50th</th>
<th>75th</th>
<th>Observations</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Willingness to Pay for Worker Flexibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flexible Schedule</td>
<td>$0.48</td>
<td>$2.15</td>
<td>-$0.82</td>
<td>$0.48</td>
<td>$1.79</td>
<td>640</td>
</tr>
<tr>
<td></td>
<td>(0.24)</td>
<td>(1.12)</td>
<td>(0.57)</td>
<td>(0.24)</td>
<td>(0.85)</td>
<td></td>
</tr>
<tr>
<td>Flexible Number of Hours</td>
<td>-$0.22</td>
<td>$2.24</td>
<td>-$1.58</td>
<td>-$0.22</td>
<td>$1.14</td>
<td>663</td>
</tr>
<tr>
<td></td>
<td>(0.22)</td>
<td>(0.94)</td>
<td>(0.54)</td>
<td>(0.22)</td>
<td>(0.68)</td>
<td></td>
</tr>
<tr>
<td>Work from Home</td>
<td>$1.33</td>
<td>$1.86</td>
<td>$0.20</td>
<td>$1.33</td>
<td>$2.45</td>
<td>608</td>
</tr>
<tr>
<td></td>
<td>(0.29)</td>
<td>(0.85)</td>
<td>(0.50)</td>
<td>(0.29)</td>
<td>(0.68)</td>
<td></td>
</tr>
<tr>
<td>Combined Flexible</td>
<td>$1.17</td>
<td>$2.33</td>
<td>-$0.25</td>
<td>$1.17</td>
<td>$2.58</td>
<td>694</td>
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<tr>
<td></td>
<td>(0.32)</td>
<td>(0.76)</td>
<td>(0.46)</td>
<td>(0.32)</td>
<td>(0.65)</td>
<td></td>
</tr>
<tr>
<td>B. Willingness to Pay to Avoid Employer Discretion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employer Discretion</td>
<td>$3.41</td>
<td>$2.95</td>
<td>$1.63</td>
<td>$3.41</td>
<td>$5.20</td>
<td>640</td>
</tr>
<tr>
<td></td>
<td>(0.47)</td>
<td>(0.90)</td>
<td>(0.50)</td>
<td>(0.47)</td>
<td>(0.88)</td>
<td></td>
</tr>
</tbody>
</table>

Notes: All treatments are compared to the baseline Monday-Friday, 9 am - 5 pm position. Estimates are generated using an inattention-corrected maximum likelihood logit model using data from the experiment. Bootstrapped standard errors based on 500 samples are in parentheses.
Robustness Checks

- Measured inattention:
  - Identical options, 1 “currently unavailable, please select the other position.”
  - Second page: Ask choose baseline / alternative

- External validity:
  - Nationally representative Understanding America Survey
  - Mechanical Turk focus groups
Issues & Extensions

- Large inattention: ~25%
  - Why so large?
- Attrition: >23% of workers didn’t complete app
  - Possible selection bias?
- Limited questions asked
  - Ex. Marital/parental status can’t be asked on job app

- Mechanism?
- Any employee sorting?
Want to replicate?

- If you run your own company...
- Alternatively, work with existing company!
  - Build relationship
  - Use pilot studies
  - Make sure company follows through!
- Still interested?
  - Talk to Amanda Pallais in our dept
So many job openings, but so hard to get hired

The Labor Department just released statistics that show that job openings in June are at a 13-year high. But while hiring is also up, it’s not nearly at the levels that the job openings are. For job-hunters, the disconnect can be frustrating and painful.

A flood of job hunters are back in the labor market

Job seekers flooded into the labor market in February, as a large number of job openings brought back people who had previously given up looking.

by Chris Isidore   @CNNMoney
How do workers find jobs?

- Lots of job search assistance, training programs
  - But what if no access to programs? ↑ inequality?

- **Q:** What are the overall welfare effects of job search assistance, for both treated & untreated?
  - Crepon et. al. (2012)
  - In cooperation with French Ministry of Labor
Experiment Setting

- Large scale job search assistance (JSA) program
  - Focus: young college grads, unemployed >6 months
  - 6 months search assistance + 6 months job support
- Covered ½ of France: N = 29,636 individuals
  - 235 regional labor markets
    - Grouped by size, demographics into 47 quintuplets
  - Low mobility between markets
Naïve experiment

1. Randomly assign to job search assistance or not
2. Compare outcomes of treated vs. control

- Concern: All in same labor market
  - $\uparrow$ jobs taken by treated = $\downarrow$ jobs left for untreated
  - Overestimate program impact
Experimental Design

- Also vary amount treated!

- 2-step randomization:
  1. Region level:
     - % treated: 0, .25, .5, .75, 1
  2. Individual level:
     - Randomly select enough people to satisfy % treated
Implementation

1. Each region: Partner with JSA providers
   - Varied treatment: Chose based on programs & cost
   - Payment: Enrollment (25%); Sign job contract (40%); 6 month employed (35%); Total: €1600-€2100

2. Each month: Eligible identified by national office → randomize whether treated

3. Treated offered entry into program
   - JSA providers not allowed to contact control

4. Follow-up surveys: 8, 12, 16, 20 months
   - JSA use, employment, demographics
Narrowing Sample

- Originally 14 monthly cohorts
- Budget constraint: limited sample could survey
  - 1-2: couple of weeks before ready to offer treatment
  - 12-14: Separate, ↑ profitable call for JSA providers
    - Anecdotal evidence: Contamination
- Imperfect unemployed list
  - 45% already employed at time of assignment
- Able to survey & not employed: N = 11,806
You can lead a horse to water...

- Only 35% take-up! Among non-participants:
  - 45% already started job; 1% about to start job; 11% studying; 17% felt JSA useless / time-consuming

- Instrument take-up with treatment assignment
  - Strong assumption: Externality same for all
  - Violation: Compliers search harder for job

- Low take-up = low statistical power
Results

- Naïve comparison:
  - +1.7pp*** 6+ month contract; +1.5pp long term job

- Externalities:
  - -1.3pp 6+ month contract; -2.1pp* long term job
  - ↑ for men, tight labor markets

- Overall Impact:
  - Assignment: No significant net effect
  - IV: +5.4pp*** 6+ month contract; +5.7pp** long term job
Hard Experiment: Prime Example

- Expensive
  - Extensive government cooperation & funding

- Fairness
  - Clear negative impact on untreated

- Contamination
  - Access to other treatments
What did we learn?
Labor experiments are hard

What you’ll need:

- Lots of funding
  - Pay employees, for programs
- Access to large portion of labor market
  - Company / government partnership
  - Hire directly: Mechanical Turk, Upwork
- Careful design
  - Start with a pilot
More Questions to Explore

- What are the impacts of job training programs?
  - Ex. Bell et. al. (1994)

- Do employers discriminate against applicants?
  - Ex. Oreopoulos & Salvanes (2011)

- Why do employers pay employees for referrals?
  - Ex. Pallais & Sands (2016)

- How do employers keep workers from slacking?
  - Ex. Bandiera, Barankay, & Rasul (2011)

- Why are women less likely to ask for promotions?