Randomized Controlled Trials

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Social Experiments

Experiments in labor markets

- Labor supply
- Job training
- Job search

Experiments in education

- Tennessee STAR
- Tracking

Experiments in health

- RAND Health Insurance Experiment
- Oregon Health Plan

Reemployment Bonus Experiment

An inevitable cost of unemployment insurance (UI) is that it will increase unemployment.

Reemployment bonus provides financial incentives for UI claimants who find jobs quickly.

There were four randomized control trials in the U.S. to evaluate the effects of reemployment bonuses.

Focus on the Illinois experiment today.

Illinois Experiment

In mid-1984 and mid-1985, the Illinois Department of Employment and Security conducted two controlled social experiments.

Claimants Bonus Experiment offered a $500 cash bonus for UI claimants if they found a job within 11 weeks of filing UI claim and if they held their jobs for at least four months.

Employer Bonus Experiment offer a $500 cash bonus for employers if workers found a job within 11 weeks of filing UI claim and if they held their jobs for at least four months.

The new UI claimants were told that their next employer would qualify for a bonus of $500..

Outcomes

Benefits paid

Duration of insured unemployment (weeks)

Reemployment wages

Aside: Unemployment Insurance

UI is a social insurance that protects against consumption drop during unemployment

Basically, involuntary unemployed workers having sufficient work history or earnings prior to job loss are eligible for UI benefits.

Why is UI public?

Benefits and costs of UI

- Consumption smoothing
- Better jobs
- Longer unemployment

Aside: Taiwan's Unemployment Insurance

In Taiwan, job losers aged 15-65 having one-year work history in the three years prior to job loss are eligible for benefits.

Monthly benefits replace 60% of average previous earnings.

Workers aged at least 45 at job loss are eligible for 9 months of benefits rather than 6 months for those under 45.

Taiwan's UI offers reemployment bonuses: UI claimants can receive 50% of remaining benefits as a bonus.

TABLE 1—ILLINOIS UNEMPLOYMENT INSURANCE EXPERIMENTS: PROGRAM PARTICIPATION AND USE

	Control		Claimant Experiment		Employer Experiment	
	N	Proportion	*N*	Proportion	*N*	Proportion
Eligible[a,b]	3,952	1.00	4,186	1.00	3,963	1.00
Agreed to Participate[c]	–	–	3,527	0.84	2,586	0.65
Submitted Notice of Hire[d]	–	–	765	0.18	199	0.05
Bonus Paid	–	–	570	0.14	112	0.03

TABLE 2—CHARACTERISTICS OF CLAIMANTS ASSIGNED TO EXPERIMENTAL GROUPS

	Control		Claimant Experiment		Employer Experiment	
	N	Proportion	*N*	Proportion	*N*	Proportion
Total	3,952	1.000	4,186	1.000	3,963	1.000
Male	2,162	0.547	2,357	0.563	2,131	0.538
White	2,497	0.632	2,723	0.651	2,565	0.647
Black	1,072	0.271	1,050	0.251	1,014	0.256
Hispanic, Native American, Other	383	0.097	413	0.099	384	0.097
Age 20–29	1,680	0.425	1,827	0.436	1,679	0.424
Age 30–39	1,315	0.333	1,357	0.324	1,292	0.326
Age 40–49	708	0.179	776	0.185	740	0.187
Age 50–54	248	0.063	226	0.054	252	0.064
Weekly Benefit Amount:						
$51	347	0.088	355	0.085	333	0.084
$52–$90	794	0.201	887	0.212	861	0.217
$91–$120	666	0.169	738	0.176	711	0.179
$121–$160	749	0.190	822	0.196	716	0.181
$161	1,396	0.353	1,384	0.331	1,342	0.339
Dependents' Allowance	1,834	0.323	1,955	0.345	1,883	0.332

TABLE 3—MEANS OF PROGRAM VARIABLES BY EXPERIMENTAL GROUP[a]

	Control		Claimant Experiment		Employer Experiment	
	Mean	*SE* of Mean	Mean	*SE* of Mean	Mean	*SE* of Mean
Benefits Paid ($):						
1) State Regular, First Spell	2,267	27.5	2,074	26.7	2,159	27.4
2) Total, First Spell	2,558	33.8	2,329	32.9	2,446	33.8
3) State Regular, Benefit Year	2,487	27.0	2,328	26.3	2,426	27.0
4) Total, Benefit Year	2,786	33.1	2,592	32.2	2,725	33.8
Weeks of Insured Unemployment:						
1) First Spell	18.3	0.205	17.0	0.199	17.7	0.205
2) Benefit Year	20.1	0.194	18.9	0.188	19.7	0.194
	Proportion	*SE* of Proportion	Proportion	*SE* of Proportion	Proportion	*SE* of Proportion
Proportion of Claimants Who:						
1) Exhausted Benefits	0.478	0.008	0.446	0.008	0.464	0.008
2) Ended Benefits within 11 weeks	0.353	0.008	0.408	0.008	0.384	0.008
N	3,952		4,186		3,963	

TABLE 4—DIFFERENCES BETWEEN CONTROL GROUP AND EXPERIMENTAL GROUP MEANS

	Claimant Experiment minus Control		Employer Experiment minus Control	
	Difference of Means	*SE*	Difference of Means	*SE*
Benefits Paid ($):				
1) State Regular, First Spell	−193[a]	38.30	−108[a]	38.82
2) Total, First Spell	−229[a]	47.15	−112[b]	47.79
3) State Regular, Benefit Year	−158[a]	37.70	−61	38.21
4) Total, Benefit Year	−194[a]	47.17	−61	46.80
Weeks of Insured Unemployment:				
1) First Spell	−1.37[a]	0.29	−0.67[b]	0.29
2) Benefit Year	−1.15[a]	0.29	−0.36	0.27
	Difference of Proportions	*SE*	Difference of Proportions	*SE*
Proportion of Claimants Who:				
1) Exhausted Benefits	−0.032[a]	0.011	−0.014	0.011
2) Ended Benefits within 11 Weeks	+0.055[a]	0.011	+0.031[a]	0.011

Summary

Bonus to claimants is estimated to reduce the insured duration of unemployment by more than one week.

The effect of bonus to employers on insured duration is also negative but imprecisely estimated.

Follow up study shows the reemployment bonus has no significant effect on reemployment wages.

Limitations of RCT

Threats to Internal Validity

Threats to External Validity

Threats to Internal Validity

Failure to randomize

Failure to follow treatment protocol

Selective attrition

Hawthorne effect

Small samples

Threats to External Validity

Non-representative sample

Non-representative program

General equilibrium effects

Mechanisms

RCT eliminates selection bias can provide unbiased estimates for treatment effects.

But, it does not tell you why.

In many circumstances, we are interested in the mechanism generating a particular treatment effect.

In some cases, the effects of separate mechanisms are of inherent interest.

Imbens, Rubin, and Sacerdote (2001) [Borjas p. 43]

Identification problem

- Unearned income is not randomly assigned

Solution used in this paper

- Lotteries assign large amounts of money randomly (in the US context also over long periods of time, annual instalments over 20 years)

Potential caveat

- Representativeness of the lottery players
- Do people treat lottery prizes differently than other sources of income?

However, likely to be significantly better than previous attempts using capital income or spouse's earnings

Sample

Sample

- large winners (above $2M)
- small winners (below $2M)
- non-winners

The "non-winners" sample comes from the population of season ticket holders who have won at least one small, one-time prize, ranging from $100 to $5,000.

Are these groups comparable?

- Winners bought more tickets than non-winners
- Non-winners more educated and older than winners
- The two groups of (large and small) winners are more alike

Descriptive Statistics

TABLE 2—SUMMARY STATISTICS BASIC SAMPLE: PRE-LOTTERY CHARACTERISTICS AND POST-LOTTERY OUTCOMES

	All (N = 496)		Nonwinners (N = 259)	Winners (N = 237)		Big winners (N = 43)	
Variable	Mean	(SD)	Mean	Mean	[t-stat]	Mean	[t-stat]
Yearly prize	26.4	(50.8)	0	55.2	[14.4]	160.0	[20.4]
Year won	1986.2	(1.2)	1986.4	1986.1	[−3.0]	1985.9	[−1.1]
Tickets bought	3.3	(2.9)	2.2	4.6	[10.2]	5.0	[0.9]
Age	50.2	(13.7)	53.2	46.9	[−5.2]	50.3	[1.8]
Age > 55	0.35	(0.48)	0.43	0.27	[−3.9]	0.40	[2.1]
Age > 65	0.15	(0.36)	0.19	0.10	[−2.9]	0.21	[2.6]
Male	0.63	(0.48)	0.67	0.58	[−2.1]	0.84	[3.9]
Years of schooling	13.7	(2.2)	14.4	13.0	[−7.8]	12.8	[−0.6]
College	0.65	(0.48)	0.78	0.51	[−6.6]	0.53	[0.4]
Working then	0.78	(0.41)	0.77	0.80	[0.9]	0.86	[1.1]

Future Earnings

Average earnings declines sharply among big winners

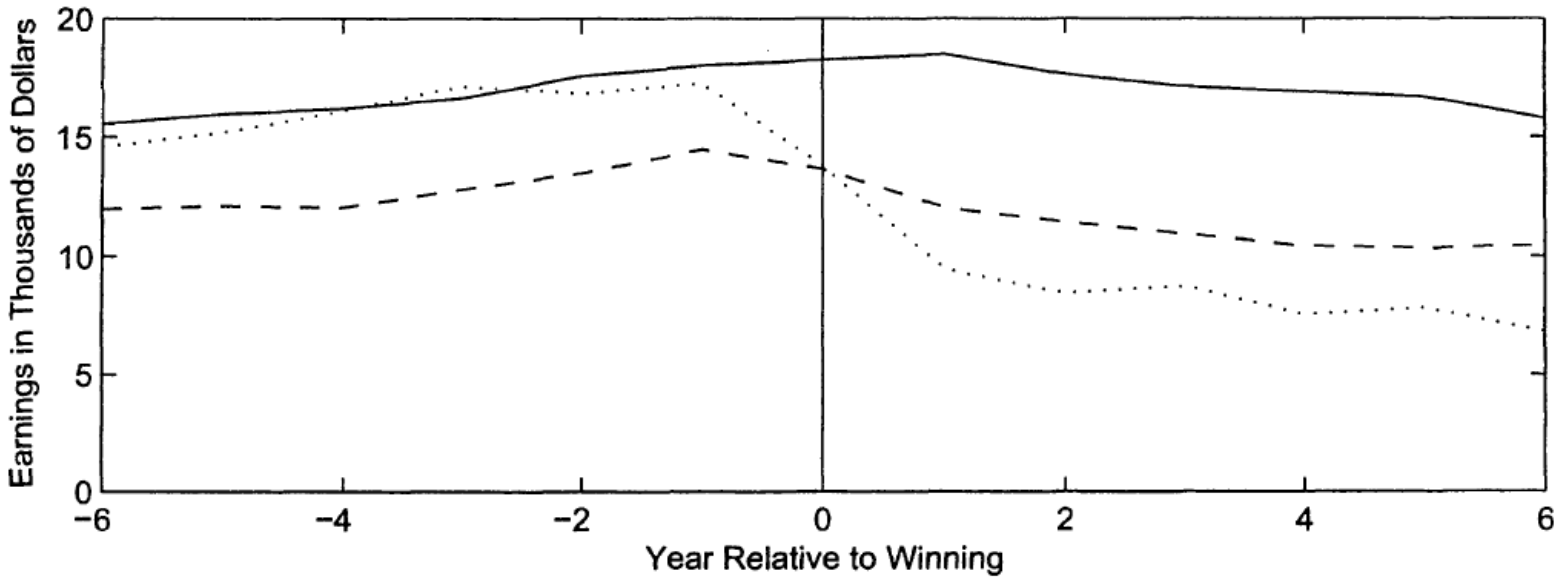

FIGURE 1. AVERAGE EARNINGS FOR NONWINNERS, WINNERS, AND BIG WINNERS

Note: Solid line = nonwinners; dashed line = winners; dotted line = big winners.

Labor Force Participation

The propensity of having positive earnings (i.e. labor force participation) declines sharply among big winners

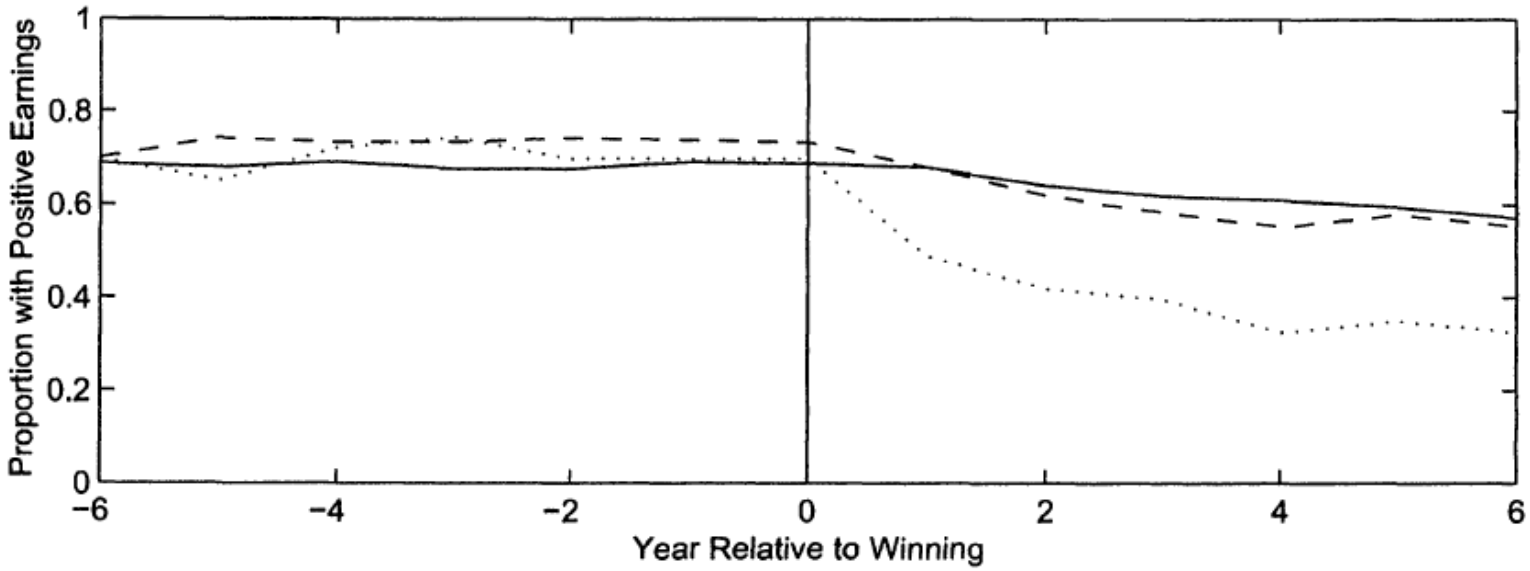

FIGURE 2. PROPORTION WITH POSITIVE EARNINGS FOR NONWINNERS, WINNERS, AND BIG WINNERS

Note: Solid line = nonwinners; dashed line = winners; dotted line = big winners.

Identification

Estimation equation:

$$y_{it} = \alpha + \beta(Lottery\ Prize_i / 20) + X_i\theta + \varepsilon_i$$

Identifying assumption

L_i independent of i (after conditioning on X_i)

Potential caveats

L_i is a function of #tickets bought ! control for the #tickets

season ticket holders (non-winners) and single ticket buyers (winners) may differ! drop the non-winners from the sample and exploit the variation in the magnitude of the prize

Estimation Results

Estimates of the marginal propensity to earn out of unearned income (mpe)

i.e. how much labor earnings change as a response to a change in non-labor earnings: $\Delta wh / \Delta V$

The takeway estimate mpe =-0.11

It takes about a year for adjusting the labor supply to the desired level