Session Two:

Influencing Individual Taxpayer Behavior

2010 IRS Research Conference

Subsidizing Charitable Contributions with a Match vs. Income Tax Rebate: What Happens to Donations and Compliance?

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Plan for presentation

- Motivation
- Experiment design
- Experiment
- Determinants of charitable donations
- Determinants of compliance
- Summary

Two ways to subsidize charitable contributions

- U.S. law: **itemized deduction from income tax**.
  - For itemizers, reduces the price of giving by the tax rate.
  - Marginal tax rate = *t,* $0<t<1$ ➔ price of giving \$1 = \$(1-*t*).
  - Price of giving and value of subsidy depend on tax rate and itemizer status.
- U.K. Gift Aid option: **government matches gift**
  - Match rate = *m*, $0<m<1$, taxpayer contributes \$1, charity gets \$(1+*m*).
  - Price of giving \$1 = \$1/(1+*m*).
- Equivalent Price of giving under both regimes if:
  - $(1-t) = 1/(1+m)$, or $t = 1 - 1/(1+m)$

Tax Administration and Tax Policy Considerations

- A significant share of taxpayers report charitable contributions.
- A significant share of reporting taxpayers make errors.
  - The average amount of error on each return is fairly small.
  - The aggregate amount is large
- Reporting charitable contributions contributes to compliance burden for individuals.
- The subsidy rate (price of giving) is currently tied to the taxpayer's marginal tax rate and decision to itemize deductions.

Equivalent rebate and match rates

Subsidy type	Subsidy rate	Actual contribution	Match-inclusive contribution	Price of giving
rebate	t	c_r	c_r	$1-t$
match	m	c_m	$c_m(1+m)$	$1/(1+m)$

Equivalent rebate and match rates			
rebate	.20	.25	.50
match	.25	.33	1.00

An example

	Rebate t=.20	Match m=.25
actual contribution	$1	$.80
match	$0	$.20
match-inclusive contribution (gross contribution, what charity gets)	$1	$1
rebate	$.20	$0
price of giving	$.80	$.80

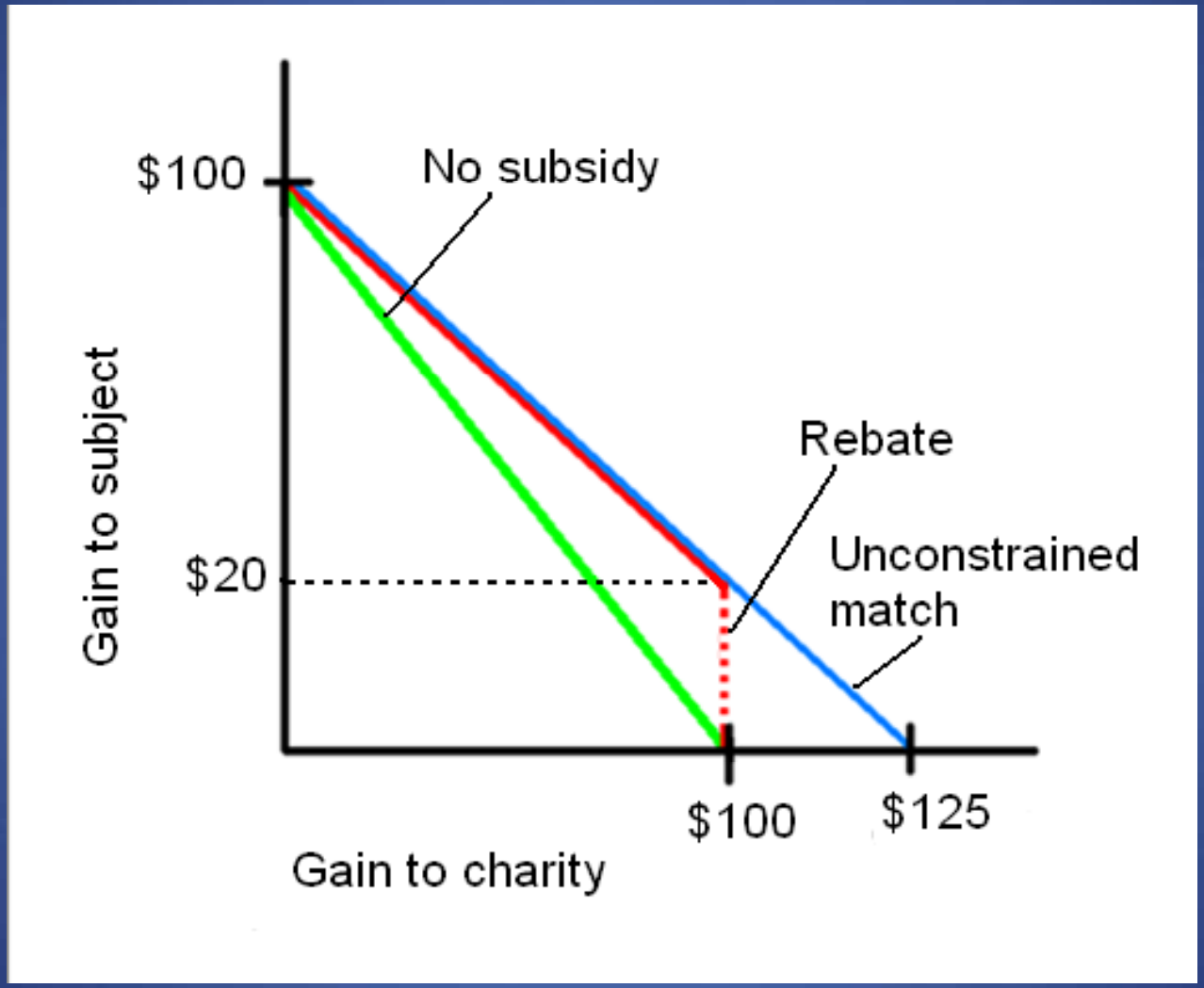
Evidence on contributions contrary to expectation

- Expect: Outcome for the charity will be the same under equivalent rebate and match rates.
  - The price of giving drives the choice of how much the charity's take should be.
  - Donors are expected to reduce own contributions under match relative to rebate, so charity ends up with the same match-inclusive amount .
- Lab and field experiments: Charities' take (match-inclusive contribution) is higher under match.
  - Eckel and Grossman 2003, 2006, 2007; Davis, Millner and Reilly, 2005; Karlan and List (2007).
  - Unexpected result is robust to: confusion about subsidy equivalence, "cooperative framing" of match, lab v. field.

Previous experiments used non-equivalent budget sets

- Under rebate, maximum payoff for charity = donor's income.
- Eckel and Grossman allowed subjects to donate entire endowment under match, growing charity's maximum payoff to $e^*(1+m)$.
- **Was observed higher charity payoff under match due to non-equivalent budget sets?**

Non-equivalent budget sets

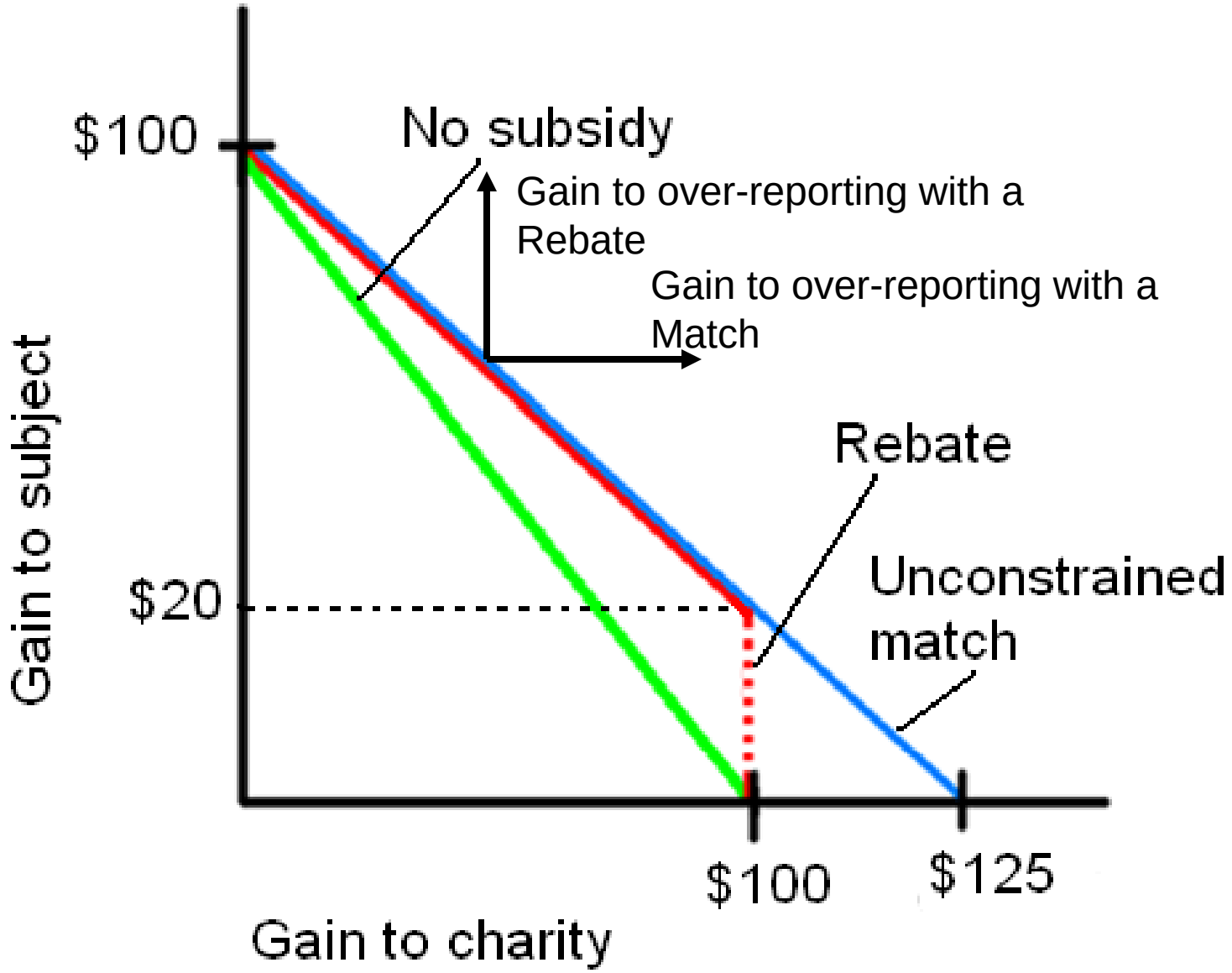


New lab experiment

- Compare **giving** under match and rebate with equivalent budget sets.
  - Constrain match giving to $e/(1+m)$.
  - Can previous finding be fully explained by non-equivalent budget sets?
- Compare **compliance** behavior under match and rebate.
  - Are subjects more compliant under match?

Match system could increase compliance

- Previous budget set was conditional on taxpayer being compliant.
- The possibility of non-compliance adds a third choice variable for the taxpayer: how much to keep, how much to give away, and how much to report to the authorities.
- Under rebate, over-reporting enriches taxpayer; under match, over-reporting enriches charity.
  - Are taxpayers more willing to over-report if it is to their own benefit? Depends on preferences.


$100
No subsidy
Gain to over-reporting with a Rebate
Gain to over-reporting with a Match
Rebate
Unconstrained match
$20
Gain to subject
$100
$125
Gain to charity

Experiment Design

Treatment 1: Contributions and Income

3 rounds
Within Subject Variation for Income ($50, $100, $200)
No Subsidy

Treatment 2: Contributions and Subsidy regime

9 Rounds – 3 rounds per subject
Within subject variation on subsidy type and budget constraint
(Rebate, Match and Unconstrained Match)
Between subject variation on subsidy rate (20%, 25% and 50%)

Treatment 3: Contributions and Compliance

12 Rounds per subject
Within subject variation on
Subsidy type (match and rebate)
Subsidy rate (20% and 50%)
Audit Probability (0%, 10% and 50%)

Conducted experiment in Spring 2009

- 465 subjects
  - Mostly undergraduate students in their 20s.
  - Roughly equal split between men and women, about 41% Econ. and related majors.
- Any adult could participate.
- Social and Behavioral Sciences Lab at University of Minnesota.
  - Computer lab with 45 carrels
  - Programming in E-Prime (subjects do not interact with one another)
- 17 sessions
- Payout for subject and charity equal to 10% of sum of payoffs from three randomly chosen rounds.
- Paid subjects cash at end of session; wrote checks to charities at end of experiment.

State-by-state comparison of mean contributions

state	Type of subsidy	Subsidy rate	Mean actual contribution	Mean gross contribution
4	Rebate	.20	29.93	29.93
5	Constrained match	.25	26.16	32.70
6	Unconstrained match	.25	27.48	34.36

(1) Subjects reduce actual contributions under constrained match relative to unconstrained match, but not enough to equate rebate and constrained match gross contributions.

(2) Subjects reduce actual contributions under constrained match relative to the rebate, but not enough to equate rebate and constrained match gross contributions.

Table 8: Fixed effects models to examine within-subject variation of contributions in Treatments 1 and 2

Independent Variable	Coefficient Estimate (Standard Error)		
	Treatment 1 (N = 465 subjects / 1,395 obs.)	Treatment 2 (N = 388 subjects / 1,164 obs.)	
		Gross Contributions	Actual Contributions
Income	**0.260 (0.008)*** **		
Match dummy (=1 in match regimes)		**9.138 (0.980)*** **	**-5.613 (0.665)*** **
Match constrained dummy (=1 if match regime contributions limited to enforce equivalent budget sets)		**-2.906 (0.980)*** **	**-1.665 (0.665)** **
Constant	**-2.710 (1.002)*** **	**32.273 (0.693)*** **	**32.273 (0.470)*** **

[a] *Subsidy rates rescaled so that rate in match/rebate equivalent regimes are identical*

****Significant at 1% probability level*

Model 1 uses all observations from Treatment 1 where there is no subsidy and income varies.

Model 2 uses all observations from Treatment 2 where income is held constant and subsidy type varies.

Contributions in a mandated compliance regime

- Table 8: Within-subject variation, treatments 1 and 2
- Contributions vary positively and significantly with income ($10 increase in income → $2.60 increase in contribution).
- Actual contributions under match significantly lower than under rebate; and gross contributions significantly higher.
- Constraining the budget set under a match reduces both actual (about $1.67) and gross ($2.91) contributions.
- Match-inclusive contributions are about $6.23 higher than under rebate. → Subjects do not fully adjust their actual contributions when offered a matching subsidy.

Table 9: Fixed effects models to examine within-subject variation of contributions in Treatment 3

Independent Variable	Coefficient Estimate (Standard Error) Interactive terms added individually (N = 465 subjects / 5,580 observations)							
	Gross Contributions				Actual Contributions			
Match dummy (=1 in match regimes)	**8.518 (0.403)*** **	**-2.845 (1.008)*** **	**-2.863 (1.073)*** **	**-2.446 (1.093)** **	**-5.521 (0.331)*** **	1.409 (0.833)*	1.482 (0.887)*	**1.778 (0.903)** **
Subsidy rate[a]	**26.635 (1.342)*** **	**10.400 (1.872)*** **	**10.400 (1.872)*** **	**10.299 (1.872)*** **	0.449 (1.102)	**10.349 (1.547)*** **	**10.349 (1.547)*** **	**10.277 (1.547)*** **
Audit probability	0.862 (0.933)	0.881 (0.920)	0.836 (1.300)	0.942 (1.301)	0.717 (0.766)	0.705 (0.760)	0.887 (1.075)	0.962 (1.075)
Audit in the Prior Round	-0.945* (0.542)	-0.747 (0.535)	-0.747 (0.535)	0.365 (0.771)	-0.015 (0.445)	-0.137 (0.442)	-0.136 (0.442)	0.655 (0.637)
Match dummy * subsidy rate interaction		**32.462 (2.647)*** **	**32.463 (2.648)*** **	**34.504 (2.647)*** **		**-19.796 (2.188)*** **	**-19.796 (2.188)*** **	**-19.767 (2.188)*** **
Match dummy * audit probability interaction			0.090 (1.838)	-0.100 (1.839)			-0.363 (1.519)	-0.498 (1.520)
Match dummy * prior audit interaction				**-2.173 (1.085)** **				-1.545 (0.897)*
Round	-0.110 (0.059)*	**-0.115 (0.058)** **	**-0.116 (0.058)** **	**-0.120 (0.058)** **	-0.067 (0.048)	-0.064 (0.048)	-.064 (0.048)	-0.067 (0.048)
R^2	.733	.741	.741	.741	.718	.723	.723	.723

[a] *Some subsidy rates rescaled so that rate in match/rebate equivalent regimes are identical*

****Significant at 1% probability level*

***Significant at 5% probability level*

**Significant at 10% probability level*

Contributions in voluntary compliance regime

- Table 9: Fixed effects model of Contributions
- Actual contributions under match significantly lower than under rebate; and gross contributions significantly higher – same as mandated compliance regime
- Impact of matching subsidy may increase as the subsidy rate increases
- Probability of an audit has a positive but insignificant impact on contributions
- An audit in prior round may reduce giving (match)

Table 10: Fixed effects models to examine within subject variation of Gross over-reported amounts in Treatment 3[a] Interaction Terms Added Individually

	Fixed Effects-OLS Models				Fixed Effects-Tobit Models							
Independent Variable	Coefficient estimate (standard error)				Estimate (standard error)	Impact	Estimate (standard error)	Impact	Estimate (standard error)	Impact	Estimate (standard error)	Impact
Subsidy rate[b]	-2.618 (1.714)	-2.618 (1.713)	-3.443 (2.424)	-3.443 (2.424)	-14.545 (5.984)**	-3.200	-14.489 (5.983)*	-3.188	-14.747 (8.325)*	-3.244	-14.786 (8.337)*	-3.253
Audit probability	-31.045 (1.192)***	-33.034 (1.654)***	-31.044 (1.192)***	-33.033 (1.684)***	-172.723 (5.802)***	-37.999	-176.998 (7.777)***	-38.940	-172.721 (5.803)***	-37.999	-177.001 (7.777)***	-38.940
Audit in the Prior Round	-0.020 (0.692)	-0.024 (0.692)	-0.010 (0.693)	-0.014 (0.692)	1.059 (2.399)	0.233	1.098 (2.399)	0.242	1.060 (2.399)	0.233	1.100 (2.399)	0.242
Match dummy (=1 in match regimes)	-1.429 (-.514)***	-2.223 ((0.700)***	-2.005 (1.306)	-2.801 (1.390)**	-6.610 (1.800)***	-1.454	-7.624 (2.168)***	-1.677	-6.754 (4.524)	-1.486	-7.838 (4.703)*	-1.724
Match dummy*subsidy rate interaction			1.650 (3.429)	1.649 (3.428)					0.417 (11.968)	0.092	0.612 (11.966)	0.135
Match dummy*audit probability interaction		3.978 (2.379)*		3.978 (2.380)*			8.963 (10.664)	1.972			8.974 (10.666)	1.974
Round	0.295 (0.075)***	0.294 (0.075)***	0.295 (0.075)***	0.294 (0.075)***	1.030 (0.264)***	0.227	1.024 (0.264)***	0.225	1.030 (0.264)***	0.227	1.024 (0.264)***	0.225
R^2	0.382	0.382	0.382	0.382								
Log likelihood					-6879.626		-6879.273		-6879.625		-6879.271	

(N=465 subjects/5,580 observations)

[a]Over-reported amounts for all compliant subjects = 0, even if they under-reported.

[b]Subsidy rates rescaled so that rate in match/rebate equivalent regimes are identical.

[c]Tobit Impact = Tobit regression estimate x probability of over-reporting (which is 0.22)

***Significant at 1% probability level

**Significant at 5% probability level

*Significant at 10% probability level

Determinants of compliance

- Table 10: Fixed effects, magnitude of over-reporting, Tobit Model
- Over-reports decline significantly as audit probability increases.
- Over-reports are significantly lower under match than under a rebate.
  - With higher audit probabilities, this effect dissipates.
- Prior audit negatively, but not significantly, associated with over-reports.

Summary

- Current U.S. tax law subsidizes charitable contributions with a tax deduction (like a rebate).
- Non-compliance and burden associated with the charitable contributions deduction is a concern.
- Experiments on alternative subsidizing schemes found that subjects contribute more (gross contributions) under a match v. rebate
- Matching and rebate subsidy are not equivalent in a voluntary compliance regime
  - Changes the incentives for non-compliance
  - Budget sets are not equivalent

Summary (cont.)

- Findings regarding giving:
  - Constraining giving in match regimes (to equivalent budget sets) reduces contributions relative to the unconstrained cases, but not enough to fully explain the difference between contributions under the match and rebate regimes.
  - Subjects reduce their actual contributions under a match, relative to the rebate, but incompletely: Their match-inclusive contributions still tend to be higher than their rebate contributions.
    - Introducing voluntary compliance does not impact this result

Summary (cont.)

- Findings regarding compliance:
  - Higher audit probabilities are associated with a lower incidence of non-compliance and smaller amounts of over-reporting.
  - Voluntary compliance is greater in a match regime.

Remaining questions and future work

- Why are contributions greater under the match?
  - Donors value own contributions, as well as charity's take?
  - Donors feel more generous in cooperative (match) environment?
  - Donors are confused between the stated subsidy rate and the price of giving?

- What would be the impact of offering taxpayers a choice between two regimes?: (1) high-burden + high-opportunity-to-cheat and (2) low-burden + low-opportunity-to-cheat?
  - Create a sorting mechanism similar to Raskolnikov(2009)
  - Some taxpayer may be willing to pay more tax to avoid burden
  - Some taxpayers may be wiling take on additional burden to avoid tax

- What are the alternatives for revising the U.S. system to reduce burden and increase compliance?