



Encouraging Participation in Tax Filing via Tax Credits and Social Safety Nets

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Introduction

- Non-filers (“ghosts”) contribute to the tax gap.
- Non-filers are not in the “system”, and so may be ineligible for social programs.
- Non-filers may stay out of the system even when their incomes increase, thereby contributing to a larger share of the tax gap.
- What can be done to encourage filing (as distinct from encouraging individuals already filing a return to report more income)?

Positive Inducements for Tax Filing

- Fiscal Exchange
- Amnesties
- Tax Credits
- Social Safety Net

⇒ In this paper we examine the effects of tax credits and social safety nets on the filing decision.

Our Methodology

- Laboratory Experiments
 - Compliance is difficult to observe in the field, and non-filing is even more so.
- In a controlled setting, we introduce filing inducements – tax credits and social safety nets.
- Our results suggest filing increases most with credits that are simple to obtain.

Empirical Assessment of Filing Inducements

- Field Studies
 - Alm, Bahl, and Murray (1991)
 - Crain and Nourzad (1993)
 - Erard and Ho (2001)
- Other work?

The Filing Decision and the Compliance Decision

- The *compliance* decision is typically analyzed as a gamble in which a filer balances the expected costs and the expected benefits of reporting another dollar.
- The *filing* decision adds another decision stage, but the issue is still the same: what is the expected utility of filing versus non-filing?

Experimental Design

- Experimental Steps:
 - Step 1. Earn income – Figure 1
 - Step 2. Choose to obtain tax form or not – Figure 2
 - Step 3. Pay taxes (Disclose Income) – Figure 3
- Timed stage – Failure to file results in a 10% penalty plus an automatic audit (with the full penalty applied)
 - Step 4. Undergo Audit
- A bingo cage appears on the screen if eligible for audit; an announcement of no audit is made if the subject is a non-filer.
 - Step 5. Receive feedback information (as per treatment)
 - Step 6. Round ends
- Earnings range (depending on earnings task performance, compliance behavior, audits, ...): \$19 - \$37.
- Experiments last approximately 90 minutes.

Figure 1 – Income Earning Task

Subject 1 Earn Your Income Training Round!

Completed Product

?	?	?
?	?	?
?	?	?

Sort These

2	8	1
6	7	5
3	4	9

Timer
0.0

Continue

There are two blocks above. The right has nine numbers in a random order (selected by the computer). To earn income you must move these numbers to the block on the left and put them in ascending order (lowest number in the upper left corner, next lowest to the right, and so on). Use the mouse to click the number you want to move first. The computer will move this number to the left block. Then click on the number you want to move next and so on. You must move the numbers in the correct order (smallest to largest). When you click the first correct number the timer will begin and continue until you have finished moving all the numbers. Your earnings depend on how quickly you complete this task. The first person to finish will get the highest income, the second person, the second highest income and so on. You will learn your earnings on the next page.

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Figure 2 – Income and Tax Policy Screen

Subject's Tax Form - Windows Internet Explorer

http://econlabdev/home/TaxCompliance2/instructions4.cfm

Subject's Tax Form

Subject 1
Tax Form
Round 1

Group Earnings Summary

\$LAB

100 90 80 70 60 50
RED bar is your earnings

Your Earnings Summary

Income earned	xxxx
Deduction (actual is amount allowed)	xxxx
Taxable Income	xxxx
Taxes Owed or Paid	xxxx
After Tax Income	xxxx
Penalty (under reporting <i>taxes owed</i>)	
Penalty for late filing	
Cost of Tax Form	
Take Home Income	xxxx

Actual

xxxx

If you want to fill out a tax form select the "Buy Form" button. It will cost \$1.00 to obtain the tax form.

Tax Policy

Tax Rate xx%
(tax owed = rate x taxable income)

Audit Probability

The likelihood of an audit xx%

Enforcement Policy

Penalty For Late Filing xx%
Penalty Rate xx%
(penalty = rate x tax owed)

Audit Success
(percent discovered during audit)

Income xx%

Unemployment Policy

Periods of filing to qualify xx
Periods unemployment will last xx
Likelihood of becoming unemployed xx%
Payment (based on your average income) xx%

Time Remaining (Seconds) = 75

After everyone has completed the earnings task, you will see a screen like this one. The next couple of instruction pages will explain this screen.

Figure 3 – Tax Form – Two Player Example with Deductions (with no Tax Credit)

Subject's Tax Form - Windows Internet Explorer

http://econlabdev/home/TaxCompliance2/subjectpage_taxform.cfm

Links Adobe Connect Aplia BSC Email Customize Links Dept Test Dictionary Econlabdev econlabdev(jones) Google Jones-O-Web OBPC

Subject's Tax Form

Subject 2 **Tax Form** **Round 1**

Group Earnings Summary	Your Earnings Summary	Actual	Department Of Treasury Individual Income Tax Return
<p>\$LAB</p> <p>100 90 RED bar is your earnings</p>	<p>Income earned 100</p> <p>Deduction (actual is amount allowed) 15</p> <p>Taxable Income 85</p> <p>Taxes Owed or Paid 30</p> <p>After Tax Income 70</p> <p>Penalty (under reporting taxes owed)</p> <p>Penalty for late filing</p> <p>Cost of Tax Form</p> <p>Take Home Income 70</p>		<p>Income 1 Income earned <input type="text" value="100"/> <input type="button" value="7"/> <input type="button" value="8"/> <input type="button" value="9"/> <input type="button" value="4"/> <input type="button" value="5"/> <input type="button" value="6"/> <input type="button" value="1"/> <input type="button" value="2"/> <input type="button" value="3"/> <input type="button" value="0"/> <input type="button" value="Clear"/></p> <p>Deductions 2 Allowable reductions in income <input type="text" value="0"/> <input type="button" value="7"/> <input type="button" value="8"/> <input type="button" value="9"/> <input type="button" value="4"/> <input type="button" value="5"/> <input type="button" value="6"/> <input type="button" value="1"/> <input type="button" value="2"/> <input type="button" value="3"/> <input type="button" value="0"/> <input type="button" value="Clear"/></p> <p>3 Taxable income <input type="text" value="100"/></p> <p>Taxes 4 Taxes owed <input type="text" value="35"/></p> <p>5 Income after taxes <input type="text" value="65"/></p>
<p>Tax Policy</p> <p>Tax Rate 35% (tax owed = rate x taxable income)</p> <p>Enforcement Policy</p> <p>Penalty For Late Filing 10%</p> <p>Penalty Rate 50% (penalty = rate x tax owed)</p> <p>Unemployment Policy</p> <p>Periods of filing to qualify 2</p> <p>Periods unemployment will last 2</p> <p>Likelihood of becoming unemployed 70%</p> <p>Payment (based on your average income) 50%</p>	<p>Audit Probability</p> <p>The likelihood of an audit 30%</p> <p>Audit Success (percent discovered during audit)</p> <p>Income 100%</p>		

Time Remaining (Seconds) = 26

Done Trusted sites 100%

Experimental Design – Treatments

- Two Inducements to File (Treatments)
 - Tax Credit
 - Social Safety Net
- Tax Credit
 - Low Income Target: $CR = 30 - 0.6 * I$
 - Moderate Income Target: $CR = 20 - 0.2 * I$
- Social Safety Net
 - Benefits paid if unemployed
 - Benefits paid as a function of past filing

Table 1 – General Treatment Design for Investigation of Inducements to File

Treatment	Sample Parameters		
No Positive Inducement	Cost of Tax Form and Probability of Audit		
Refundable Tax Credit	Conditional on Low Income	Available to Low and Medium Income	Available to All Income Levels
Income (Employment) Risk	Support: Moderate Percentage of Previous Income	Support: High Percentage of Previous Income	

Table 2 – No Inducement Conditions

Treatment	Tax Rate	Audit Probabilities	Penalty Rate	Deduction	Income Range	Form Cost
NI1	35%	0.4, 0.3, 0.4	150%	15%	10 to 100 1 per level	2, 1, 0

Table 3 – Tax Credit Settings

Treatmen	Income Range	Penalty Rate	Audit Probability	Credit Equation
CT1	10 – 100 1 per level	150%	0.3, 0.4, 0.3	$CR = 20 - 0.2 * I$ (Moderate income credit)
CT2	10 – 100 1 per level	150%	0.3, 0.4, 0.3	$CR = 30 - 0.6 * I$ (Low income credit)

Table 4 – Income Support Settings

Treatment	Probability of Unemployment	Percentage Benefits	Filing Periods Required	Audit Probabilities	Form Cost
UT1	0.4 and 0.2	0.5	2	0.3, 0.4, 0.3	2, 1, 0
UT2	0.4	0.6	2	0.3, .04, 0.3	2, 1, 0

Results and Discussion

- Decisions: Obtain Form and File Form
- General Results – Table 7

Table 7 – Aggregate Filing Behavior

Treatment	Frequency of Filing	Frequency of Obtaining Form	Cost of Specific Program
No Inducement	0.445	0.460	N/A
Credit (All)	0.624	0.660	N/A
Credit (Low Income)	0.610	0.665	60
Credit (Moderate Income)	0.630	0.655	90
Social Safety Net	0.561	0.579	90 (expected)

Econometric Estimations

- Panel Dataset – 106 subjects and 18 or 20 decision rounds
- Random effects probit model:

$$T_{i,t} = \beta_1 + \beta_2 P_i + \beta_3 I_i + \beta_4 p(A)_{i,t} + \beta_5 C_i + \beta_6 U_i + \beta_7 LB_{i,t-2} + \beta_8 (I * C)_i + \psi_t + u_i + \varepsilon_{i,t}$$

- where (suppressing subscripts):
 - T denotes the decision to buy or file a tax form in period
 - P is the price to obtain a tax form
 - I is the subject's earned income in the round
 - $p(A)$ is the audit probability
 - C and U are indicator variables that signifies the presence of a tax credit and unemployment benefits
 - LB is an indicator variable that signifies the subject received unemployment benefits two periods prior
 - $I * C$ is an interaction term between income and credit
 - ψ is a set of $T-1$ dummies that capture potential non-linear period effects
 - u are random effects that control for unobserved individual characteristics

**Table 6 – Econometric Results:
Dependent Variable is Form Filed or Form Bought**

Independent Variable	Filed 1W	Filed 2W	Bought 1W	Bought 2W
Constant	-0.779* (0.416)	-0.541 (0.452)	-0.295 (0.539)	-0.235 (0.532)
Cost of Form			-0.309* (0.182)	-0.303* (0.160)
Income Earned	0.004*** (0.002)	0.004*** (0.002)	0.006*** (0.002)	0.005*** (0.002)
Audit Probability	0.589 (0.722)	-0.036 (0.813)	0.895 (0.725)	0.540 (0.821)
Credit (Yes=1)	1.406*** (0.401)	1.414*** (0.406)	1.111*** (0.443)	1.123*** (0.447)
Income Earned * Credit	-0.012*** (0.003)	-0.012*** (0.003)	-0.011*** (0.003)	-0.011*** (0.003)
Unemployment Possible	0.788** (0.397)	0.735* (0.403)	0.419 (0.463)	0.395 (0.467)
Lag 2 Period Unemployment	0.269** (0.139)	0.338*** (0.142)	0.273** (0.140)	0.324** (0.143)
Wald Chi-square	31.14***	50.73***	35.21***	46.44***
Log likelihood	-921.61	-911.10	-913.11	-907.03

Discussion of Results

- A targeted tax credit gives the highest return for its program cost.
- The social safety net (e.g., unemployment insurance) is less effective.
- For the tax credit taken up by low income participants, the coefficient on the I*C interaction term is negative.

Conclusions

- Positive inducements can increase filing.
- Future work?
 - The cost of filing reduces form acquisition but the effect is weakly significant – further work is required.
 - There may be an interaction of inducement instruments – further work is required.
 - There may also be an interaction of inducements and complexity/information – again further work is required.