Electronic Supplementary Material

Title: "Who is audited? Experimental study of rule-based tax auditing"

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1. Experimental instructions

The instructions used for the experiment are described below based on those used for the lowest income reporter audited (LIRA) condition. The differences between these instructions and those used for other conditions are indicated by inserted paragraphs as necessary. After the experimenter explained the general cautions to all the subjects, the experimenter read the following instructions aloud to them.

[*Subjects in all treatments read*]

Test overview explanation

Everyone will repeatedly perform a decision-making task that I will describe (there will be 20 of these decision-making rounds). Three of the other participants will be your group members. You will have different group members for each decision-making round.

Your computer screen will show you an income amount that you have earned for the current round. This income is determined by a randomized computer algorithm. Only you are able to know your income. After you have seen your income, you will set the amount you want to report (your reported income). Twenty percent of your reported income will be collected as a tax.

For each decision-making round, either you or one of your group members will be designated as the audit recipient, in accordance with the rules I will describe. If you are designated as the audit recipient, you may not refuse to take part in the audit.

Decision-making rounds

First, the computer screen will show you your actual income. It will be an amount between 0 and 1,000 (yen) in 10-yen increments. The amount shown is determined by a randomized computer algorithm. Only you are able to know this amount.

After you have seen the amount shown, set the amount that you want to report. It should be an integer (a multiple of 10 yen) between 0 and your actual income amount. Twenty percent of the amount you report will be collected as tax. So, if you are not audited, the amount you earn will be [Your actual income] – [Your reported income × 0.2]. For example, if your income is 500 yen and the income you report is 300 yen, the amount you earn will be 500 yen – [300 yen × 0.2 = 60 yen] = 440

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yen.

[*Subjects in LIRA read*]

Explanation of the audit process

The audit recipient will be selected by a computer algorithm in accordance with the following rules. Among the group of you and your group members, the participant who reported the lowest income amount will be the audit recipient. No other participant will ever be selected as the audit recipient (they have a zero probability of being the audit recipient). If your reported income is the lowest in your participant group (which consists of you and your group members), you will be the audit recipient. If you are designated as the audit recipient, a tax of 60% of your unreported income (= the difference between your actual income and the reported income) will be collected. So, if you are designated as the audit recipient, the amount you earn will be [Your actual income] – [Your reported income × 0.2] – [Your unreported income × 0.6]. If the lowest reported income was reported by more than one participant, the audit recipient will be selected by a randomized computer algorithm.

[*Subjects in Random read*]

Explanation of the audit process

Audits will be done in accordance with the following rules. One audit recipient will be selected randomly by a computer algorithm, regardless of the actual or reported income amounts of you and your group members. If you are designated as the audit recipient, a tax of 60% of your unreported income (= the difference between your actual income and the reported income) will be collected. So, if you are designated as the audit recipient, the amount you earn will be [Your actual income] – [Your reported income × 0.2] – [Your unreported income × 0.6].

[*Subjects in Cut-off O read*]

Explanation of the audit process

The audit recipient will be selected by a computer algorithm in accordance with the following rules. If your reported income is less than 750, the probability that you will be selected as the audit recipient is 1/3. If your reported income is 750 or more, you will never be selected as the audit recipient (you will have a zero probability of being selected as the audit recipient). If you are designated as the audit recipient, a tax of 60% of your unreported income (= the difference between your actual income and the reported income) will be collected. So, if you are designated as the audit recipient, the amount you earn will be [Your actual income] – [Your reported income × 0.2] – [Your unreported income × 0.6].

[*Subjects in Cut-off S read*]

Explanation of the audit process

The audit recipient will be selected by a computer algorithm in accordance with the following rules. If your reported income is less than 500, the probability that you will be selected as the audit recipient is one-half. If your reported income is 500 or more, you will never be selected as the audit recipient (you will have a zero probability of being selected as the audit recipient). If you are designated as the audit recipient, a tax of 60% of your unreported income (= the difference between your actual income and the reported income) will be collected. So, if you are designated as the audit recipient, the amount you earn will be [Your actual income] – [Your reported income × 0.2] – [Your unreported income × 0.6].

[*Subjects in all treatments read*]

Each decision-making round will be carried out as described above. Twenty decision-making rounds will be conducted. You will have different group members for each decision-making round.

Summary of Amounts Earned in Each Round:
Amount earned when not audited = Actual income – [Reported income × 0.2]
Amount earned when audited = Actual income – [Reported income × 0.2] – [Unreported income × 0.6]

Method of Calculating Monetary Reward:
Your monetary reward will be determined based on the earned amounts.
Monetary reward (yen) = Total of three earned amounts selected by lottery + Remuneration for participation

After the instructions above were read, the screens were explained to the participants. They were then administered the following quiz in the payment round.

2. Quiz

1. Please fill in and circle the correct answer.
A group consists of ____ subjects. The subjects you matched with (1) do not change (2) change every period (3) change every three periods.

2. Suppose that your true income is 800 and you report 600. Then, what is your tax, including penalty? Please circle the correct answer.
A. When you are not audited, your tax is (1) 200 (2) 240 (3) 120.

B. When you are audited, your tax is (1) 200 (2) 240 (3) 120.

3. Suppose that your true income is 820. Then, what is the maximum you can report? (1) 1,000 (2) 820 (3) 600

4. How is the audit target chosen? Please circle the correct answer.

(1) The group member whose report is the lowest in the group.

(2) The group member whose report is the highest in the group.

[*subjects in Random read*]

(3) The group member chosen at random by a computer.

[*subjects in LIRA read*]

(3) The group member whose income is the highest in the group.

[*subjects in Cut off O read*]

(3) The group member whose report is less than or equal to 750, chosen with a probability of 1/3 by a computer. ** There was a typo. The word "or equal to" should have been deleted**

[*subjects in Cut off S read*]

(3) The group member whose report is less than 500, chosen with a probability of 1/2 by a computer.

(4) The group member chosen by a subject playing an auditor.

5. Suppose that your true income is 800 and you report 400. Then, what is your earning?

When you are not audited	

When you are audited	

3. Post-experimental questionnaires

3.1. Questionnaires assessing tax awareness

Italic fonts are added by the authors for ease of readers.

Do you agree with the following statements? Please circle the most appropriate number on the scale.

A. Tax-payment awareness

A.1 Tax-payment is indispensable to the life of the people.

10______20______30______40______50______60______70______80______90______100

Absolutely unacceptable Absolutely acceptable

A.2 Tax-payment is one of the most important national obligations.

10______20______30______40______50______60______70______80______90______100

Absolutely unacceptable Absolutely acceptable

A.3 Paying tax based on one's true income is a matter of course.

10______20______30______40______50______60______70______80______90______100

Absolutely unacceptable Absolutely acceptable

B. Acceptable Tax Rate

B.1 In your opinion, what is the appropriate percentage of income tax for 100,000 Japanese yen?

%

C. Aggressiveness for Tax Evasion

C.1 It is not difficult to hide one's true income.

10______20______30______40______50______60______70______80______90______100

Absolutely unacceptable Absolutely acceptable

D. Needs for Tax Audit System

D.1 Tax audit is essential to prevent tax evasion.

10______20______30______40______50______60______70______80______90______100

Absolutely unacceptable Absolutely acceptable

D.2 Many tax evasions are exposed through tax audits.

10______20______30______40______50______60______70______80______90______100

Absolutely unacceptable Absolutely acceptable

E. Satisfaction with public services

E.1 A government wastes national tax.

10______20______30______40______50______60______70______80______90______100

Absolutely unacceptable Absolutely acceptable

E.2 Many social services should be transferred from the private sector to the public sector.

10______20______30______40______50______60______70______80______90______100

Absolutely unacceptable Absolutely acceptable

*E.3*Public services in Japan are enriching.

10______20______30______40______50______60______70______80______90______100

Absolutely unacceptable Absolutely acceptable

F. Tax Compliance

F.1 An individual who hides his/her true income receives public assistance.

10______20______30______40______50______60______70______80______90______100

Absolutely unacceptable Absolutely acceptable

F.2 An individual who evades tax receives sufficient public service.

10______20______30______40______50______60______70______80______90______100

Absolutely unacceptable Absolutely acceptable

F.3 A firm that evades corporate income tax runs its business through the use of subsidies.

10______20______30______40______50______60______70______80______90______100

Absolutely unacceptable Absolutely acceptable

3.2. Questionnaires assessing risk attitude

In the following, you choose the lottery and money for sure category you prefer. In each lottery category, you win or lose a certain amount of money based on a certain probability. In each question, the left column shows the lotteries that differ from the other in the winning probability.

Question 1

Lotteries			Money for sure
-100 yen for sure			0 yen
10% of 300 yen, 90% of -100 yen			0 yen
20% of 300 yen, 80% of -100 yen			0 yen
30% of 300 yen, 70% of -100 yen			0 yen
40% of 300 yen, 60% of -100 yen			0 yen
50% of 300 yen, 50% of -100 yen			0 yen
60% of 300 yen, 40% of -100 yen			0 yen
70% of 300 yen, 30% of -100 yen			0 yen
80% of 300 yen, 20% of -100 yen			0 yen
90% of 300 yen, 10% of -100 yen			0 yen
300 yen for sure			0 yen

Question 2

Lotteries			Money for sure
-300 yen for sure			0 yen
10% of 300 yen, 90% of -300 yen			0 yen
20% of 300 yen, 80% of -300 yen			0 yen
30% of 300 yen, 70% of -300 yen			0 yen
40% of 300 yen, 60% of -300 yen			0 yen
50% of 300 yen, 50% of -300 yen			0 yen
60% of 300 yen, 40% of -300 yen			0 yen
70% of 300 yen, 30% of -300 yen			0 yen
80% of 300 yen, 20% of -300 yen			0 yen
90% of 300 yen, 10% of -300 yen			0 yen
300 yen for sure			0 yen

Question 3

Lotteries	Money for sure

3400 yen for sure			3700 yen
10% of 4000 yen, 90% of 3400 yen			3700 yen
20% of 4000 yen, 80% of 3400 yen			3700 yen
30% of 4000 yen, 70% of 3400 yen			3700 yen
40% of 4000 yen, 60% of 3400 yen			3700 yen
50% of 4000 yen, 50% of 3400 yen			3700 yen
60% of 4000 yen, 40% of 3400 yen			3700 yen
70% of 4000 yen, 30% of 3400 yen			3700 yen
80% of 4000 yen, 20% of 3400 yen			3700 yen
90% of 4000 yen, 10% of 3400 yen			3700 yen
4000 yen for sure			3700 yen

Question 4

Lotteries		Money for sure	
3600 yen for sure			3700 yen
10% of 4000 yen, 90% of 3600 yen			3700 yen
20% of 4000 yen, 80% of 3600 yen			3700 yen
30% of 4000 yen, 70% of 3600 yen			3700 yen
40% of 4000 yen, 60% of 3600 yen			3700 yen
50% of 4000 yen, 50% of 3600 yen			3700 yen
60% of 4000 yen, 40% of 3600 yen			3700 yen
70% of 4000 yen, 30% of 3600 yen			3700 yen
80% of 4000 yen, 20% of 3600 yen			3700 yen
90% of 4000 yen, 10% of 3600 yen			3700 yen
4000 yen for sure			3700 yen

Please confirm that you have provided your ID.

Thank you.

4. Theoretical analysis of the LIRA rule

Let $N = \{1, 2, \ldots, n\}$, with $n \geqq 2$ as the set of taxpayers (individuals or firms) that should report their income to a tax authority. For $i \in N$, true income is denoted by $Y_i \in [Y_\ell, Y_h]$, where Y_ℓ, and Y_h are the lower and upper bounds of income, respectively. In our experiment, these are equal to 0 and 1000, respectively. Each *i* with income Y_i reports $r_i \in [0, Y_i]$ to the tax authority.

In the income-reporting game, taxpayers report their incomes simultaneously. Let $(r_1, r_2, \ldots, r_n) \in [0,1000]^n$ be the profile of the reported incomes. A tax authority observes the profile and inspects the individual with the lowest reported income. If there is a tie, a random selection is made from among the tied members.

We assume that the true income of each individual is a random variable. Thus, we model the income-reporting game with a strategic inspection as a normal-form game with incomplete information (Harsanyi 1967). We assume that the true income Y_i of an individual is identically and independently distributed according to a continuous distribution function *F* on $[0,1000]$. Let *f* be the density function of *F*. Because the income-reporting game with strategic auditing is a normal-form game with incomplete information, the strategy of player *i* is a function that associates his/her realized true income Y_i with reporting income r_i. Let γ_i be the strategy of player *i*.

We adopt the symmetric Bayesian Nash equilibrium (BNE) $(\gamma, \gamma, \ldots, \gamma)$, where every player uses the same strategy γ as a solution criterion to evaluate strategic auditing.

We assume the following differentiability condition.

Assumption 1. A Bayesian equilibrium strategy γ_i is a continuous, differentiable, and increasing function with $\gamma(0) = 0$.

We explore the conditions that should be satisfied by γ. Suppose $n-1$ individuals, with the exception of player *i* with income *Y* (type *Y* player), follow strategy γ. The expected payoff of the type *Y* player reporting $r \le Y$ is

$$U(r,Y) = Y - tr - \left(1 - F\left(\gamma^{-1}(r)\right)\right)^{n-1} qt(Y - r). \tag{1}$$

Note that $\left(1 - F\left(\gamma^{-1}(r)\right)\right)^{n-1}$ is the probability of r being the lowest reported income among n reported incomes. This is a continuous function in the domain $[0, Y]$ when γ is a continuous function. By differentiating $U(r,Y)$ in r, we obtain

$$\frac{\partial U}{\partial r} = -t - (n-1)\left(1 - F\left(\gamma^{-1}(r)\right)\right)^{n-2}\left(-f\left(\gamma^{-1}(r)\right)\right)\frac{qt(Y-r)}{\gamma'\left(\gamma^{-1}(r)\right)} + \left(1 - F\left(\gamma^{-1}(r)\right)\right)^{n-1} qt\,. \tag{2}$$

For $(\gamma, \gamma, \ldots, \gamma)$ to constitute a BNE, there must be a local maximum at $r = \gamma(Y)$. Thus, the following first-order condition should be satisfied:

$$\frac{\partial U}{\partial r}\left(\gamma\left(Y\right),Y\right)\begin{cases}\geq 0 & \text{if } \gamma\left(Y\right)=Y\\ =0 & \text{if } 0<\gamma\left(Y\right)<Y\\ \leq 0 & \text{if } \gamma\left(Y\right)=0\end{cases}$$

$$\Leftrightarrow \frac{\left(\frac{1}{q}-\left(1-F\left(Y\right)\right)^{n-1}\right)}{\left(n-1\right)\left(1-F\left(Y\right)\right)^{n-2}f\left(Y\right)}\gamma'\left(Y\right)\begin{cases}\leq Y-\gamma\left(Y\right) & \text{if } \gamma\left(Y\right)=Y\\ =Y-\gamma\left(Y\right) & \text{if } 0<\gamma\left(Y\right)<Y\\ \geq Y-\gamma\left(Y\right) & \text{if } \gamma\left(Y\right)=0\end{cases}$$

Let Y^* be defined as follows:

$$Y^* = F^{-1}\left(1-\left(\frac{1}{q}\right)^{1/(n-1)}\right). \tag{3}$$

For $Y<Y^*$, $\frac{1}{q}-\left(1-F\left(Y\right)\right)^{n-1}<0$. $\gamma'>0$ from Assumption A1 and $Y-\gamma(Y)≧0$, $Y=\gamma(Y)$ must hold for $Y<Y^*$. Therefore, a type Y taxpayer for $Y\leq Y^*$ truthfully reports his/her income.

Next, consider Y that satisfies $Y>Y^*$. The differential equation can be reduced to

$$\gamma'\left(Y\right)+A\left(Y\right)\gamma\left(Y\right)=A\left(Y\right)Y$$

where

$$A\left(Y\right)=\frac{\left(n-1\right)\left(1-F\left(Y\right)\right)^{n-2}f\left(Y\right)}{\left(\frac{1}{q}-\left(1-F\left(Y\right)\right)^{n-1}\right)}$$

and $A(Y)>0$ for $Y>Y^*$. A general solution of the above differential equation is

$$\gamma\left(Y\right)=e^{-\int A(Y)dY}\left(\int A\left(Y\right)Ye^{\int A(Y)dY}dY+C\right)$$

with an initial condition $A(Y)=Y^*$. By using partial integration,

$$\begin{aligned}\gamma\left(Y\right)&=e^{-\int A(Y)dY}\left(Ye^{\int A(Y)dY}-\int e^{\int A(Y)dY}dY+C\right)\\ &=Y-e^{-\int A(Y)dY}\left(\int e^{\int A(Y)dY}dY-C\right).\end{aligned}$$

Let $a(Y)=\int A(Y)dY$, that is, an indefinite integral of $A(Y)$. Consider the initial condition:

$$\gamma(Y)=Y-\int_{Y^*}^{Y}e^{a(z)}dz\,/\,e^{a(Y)}=Y-\int_{Y^*}^{Y}e^{a(z)-a(Y)}dz \text{ for } Y>Y^*.$$

Therefore, we have a candidate for an equilibrium strategy as follows:

$$\gamma(Y) = \begin{cases} Y & \text{for } Y \leqq Y^* \\ Y - \int_{Y^*}^{Y} e^{a(z)-a(Y)} dz & \text{for } Y > Y^*. \end{cases} \tag{4}$$

The next proposition states that γ constitutes a BNE.

Proposition 1. *Let γ be defined in (4). Strategy profile $(\gamma, \gamma, \ldots, \gamma)$ is a BNE.*

Proof. The payoff of type Y reporting r is given by (1) and is reduced to

$$U(r, Y) = (1-t)Y + t(Y-r)\left(1 - q\left(1 - F\left(\gamma^{-1}(r)\right)\right)^{n-1}\right) \tag{5}$$

We consider the following cases separately: (i) $Y < Y^*$ and (ii) $Y \geq Y^*$.

Case (i) $Y < Y^*$. Because $r \leq Y < Y^*$ and $\gamma(r) = r,$ the payoff described by (5) is rewritten as follows:

$$(1-t)Y + t(Y-r)\left(1 - q\left(1 - F(r)\right)^{n-1}\right). \tag{6}$$

Since $r \leq Y < Y^*$ and Y^* satisfies (3), $1 - q\left(1 - F(r)\right)^{n-1}$ is negative. Therefore, the taxpayer payoff is maximized at $r = Y$.

Case (ii) $Y \geq Y^*$. When $r \leq Y^*$, the payoff is given by (6) and is maximized at $r = Y^*$ in the domain $[0, Y^*]$. Next, suppose $r > Y^*$. The first derivative of $U(r, Y)$ given by (2) is rewritten as follows:

$$\frac{\partial U}{\partial r} = -t + (n-1)\left(1 - F\left(\gamma^{-1}(r)\right)\right)^{n-2} f\left(\gamma^{-1}(r)\right) \frac{qt\left(\gamma^{-1}(r) - r\right)}{\gamma'\left(\gamma^{-1}(r)\right)}$$

$$+\left(1 - F\left(\gamma^{-1}(r)\right)\right)^{n-1} qt + (n-1)\left(1 - F\left(\gamma^{-1}(r)\right)\right)^{n-2} f\left(\gamma^{-1}(r)\right) \frac{qt\left(Y - \gamma^{-1}(r)\right)}{\gamma'\left(\gamma^{-1}(r)\right)}.$$

Because $Y^* < \gamma^{-1}(r) < r$ and from (3), γ must satisfy the following:

$$\frac{\left(\frac{1}{q} - \left(1 - F(Y)\right)^{n-1}\right)}{(n-1)\left(1 - F(Y)\right)^{n-2} f(Y)} = \frac{Y - \gamma(Y)}{\gamma'(Y)}.$$

By using this, the first derivative is reduced to

$$\frac{\partial U}{\partial r} = -t + (n-1)\left(1-F\left(\gamma^{-1}(r)\right)\right)^{n-2} f\left(\gamma^{-1}(r)\right)t\left(\frac{\left(1-q\left(1-F\left(\gamma^{-1}(r)\right)\right)^{n-1}\right)}{(n-1)\left(1-F\left(\gamma^{-1}(r)\right)\right)^{n-2} f\left(\gamma^{-1}(r)\right)}\right)$$

$$+\left(1-F\left(\gamma^{-1}(r)\right)\right)^{n-1} qt + (n-1)\left(1-F\left(\gamma^{-1}(r)\right)\right)^{n-2} f\left(\gamma^{-1}(r)\right)\frac{qt\left(Y-\gamma^{-1}(r)\right)}{\gamma'\left(\gamma^{-1}(r)\right)}$$

$$= -t + t\left(1-q\left(1-F\left(\gamma^{-1}(r)\right)\right)^{n-1}\right) + \left(1-F\left(\gamma^{-1}(r)\right)\right)^{n-1} qt$$

$$+(n-1)\left(1-F\left(\gamma^{-1}(r)\right)\right)^{n-2} f\left(\gamma^{-1}(r)\right)\frac{qt\left(Y-\gamma^{-1}(r)\right)}{\gamma'\left(\gamma^{-1}(r)\right)}$$

$$= (n-1)\left(1-F\left(\gamma^{-1}(r)\right)\right)^{n-2} f\left(\gamma^{-1}(r)\right)\frac{qt\left(Y-\gamma^{-1}(r)\right)}{\gamma'\left(\gamma^{-1}(r)\right)}.$$

This is positive for $r \in [Y^*, \gamma(Y))$, negative for $r \in (\gamma(Y), Y]$, and zero if $r = \gamma(Y)$. Thus, U is maximized at $r = \gamma(Y)$. Therefore, the proof ends.

The following intuition can be gained from the preceding discussion. Because the lowest reporter is audited, the risk of punishment when cheating is high for low-income taxpayers. This implies that truthful reporting is more likely to occur among low-income taxpayers. Assuming that every taxpayer with income below Y truthfully reports his/her true income, the payoff for a taxpayer with income Y when (s)he reports r is given by (6). Therefore, as long as $1-q\left(1-F(r)\right)^{n-1}$ is negative, the preferred action is to truthfully report the income. The critical value of reporting income truthfully is obtained when $1-q\left(1-F(r)\right)^{n-1}=0$ i.e., $Y=Y^*$. For a taxpayer whose income exceeds Y^*, truthful reporting is never a preferred action. The extent of tax evasion is captured by $\int_{Y^*}^{Y} e^{a(z)}dz \,/\, e^{a(Y)}$. The slope of γ in the domain $[Y^*, 1000]$ is

$$\gamma'(Y) = 1 - \frac{1}{\left(e^{a(Y)}\right)^2}\left(\left(e^{a(Y)}\right)^2 - e^{a(Y)}A(Y)\int_{Y^*}^{Y} e^{a(z)}dz\right)$$

$$= \frac{A(Y)}{e^{a(Y)}}\int_{Y^*}^{Y} e^{a(z)}dz > 0.$$

Thus, the reported income itself is an increasing function, and Assumption A1 is fulfilled. Figure 1 is obtained by applying the formula in (4) to our experimental setting with the numerical calculation of the integral.

5. Additional tables and figures

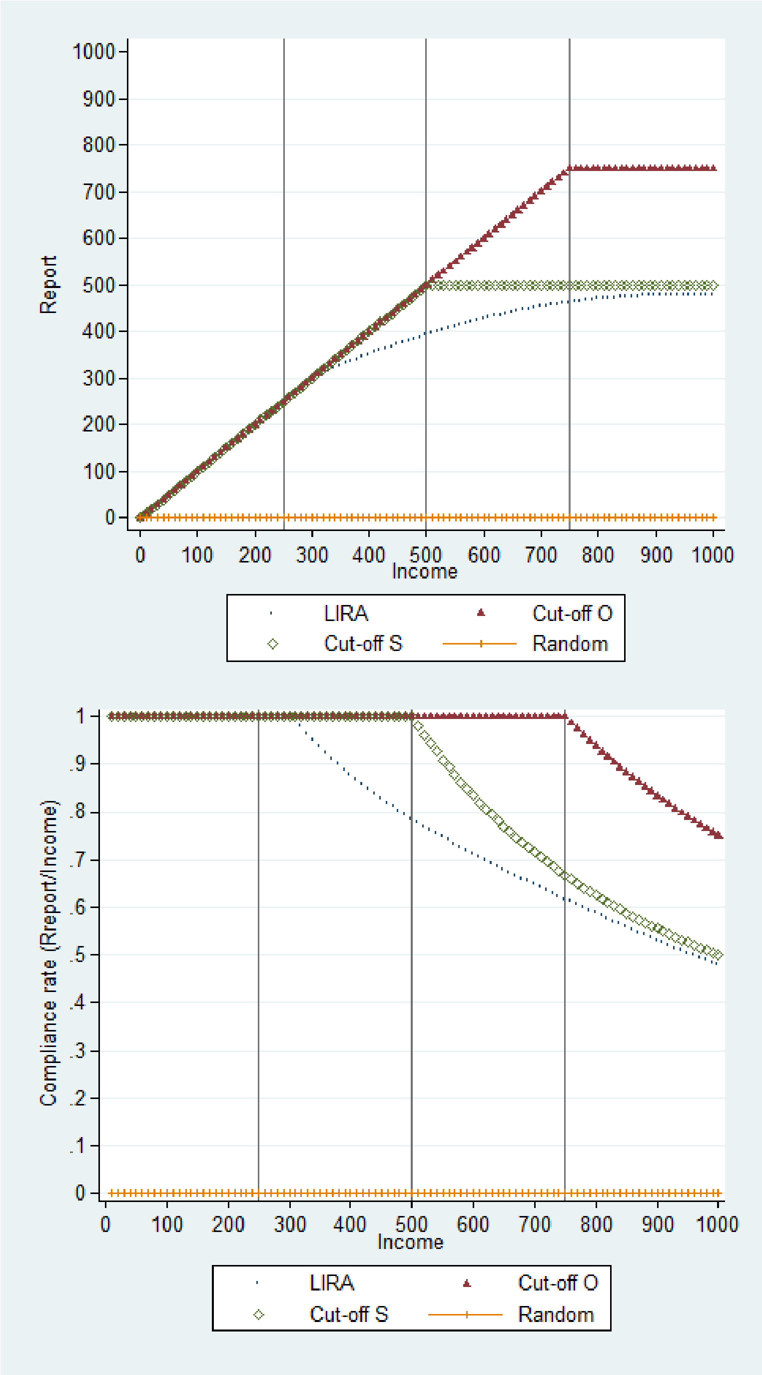

Figure A1. Theoretical predictions of reported incomes under the audit rule

The upper panel of Figure A1 shows the prediction of taxpayers' reporting strategies under each audit rule. The lower panel of Figure A1 illustrates the predicted compliance rate.

Table A1 presents the expected tax revenue per taxpayer under these four treatments, broken down into tax revenue from the reported income, penalty, and their total.

Table A1. Predicted tax revenues

	Audit Rule			
	Cut-off O	Cut-off S	LIRA	Random
Tax Revenue	93.6	75.0	68.2	0
Penalty Revenue	0	0	2.7	75.0
Total Revenue	93.6	75.0	70.9	75.0

Since the ranking in the compliance rate remains the same for all income levels, we have the same ranking in the expected tax revenue. Revenue from penalties is reversed. Overall, the total tax revenue is the highest in Cut-off O, second highest in Cut-off S and Random, and lowest in LIRA. Note that the penalty and total revenue depends on t and q.

Table A2. Additional variable definitions and statistics

Variable	Definition	Average	Std. Dev
Tax awareness	average of the answers in the questionnaire (10 to 100 points) on tax awareness	82.605	14.732
Acceptable tax rate	acceptable tax rate of a subject in 10,000 JPY	8.873	6.430
Aggressiveness	average of the answers in the questionnaire (10 to 100 points) on aggressiveness against tax evasion	40.098	22.957
Needs for audit	average of the answers in the questionnaire (10 to 100 points) on the need for tax audit	65.697	15.831
Satisfaction for public services	average of the answers in the questionnaire (10 to 100 points) on the satisfaction with public services	43.747	11.910
Risk attitude	minimal acceptance probability for winning lottery	52.690	28.148
Male	= 1 if a subject is male	0.673	0.469
Decision time	time (sec) spent for income reporting	22.991	6.582
Audit (t-1)	= 1 if a subject was audited at *t*-1, and 0 otherwise	0.249	0.432
Penalty (t-1)	the amount of penalty at *t*-1	16.958	31.063

Table A3. Determinants of the compliance rate and tax revenue

Variables	A: DV = Compliance Rate				B: DV = Compliance Rate				C: DV = Tax Revenue				D: DV = Tax Revenue			
	Coef.	Std.Err.	z		Coef.	Std.Err.	z		Coef.	Std.Err.	z		Coef.	Std.Err.	z	
Constant	60.503	12.752	4.74	***	68.393	12.816	5.34	***	97.561	17.163	5.68	***	33.091	13.748	2.41	**
LIRA (reference)																
Random	-18.024	5.759	-3.13	***	-29.111	7.854	-3.71	***	3.068	5.195	0.59		-15.512	4.952	-3.13	**
Cut-Off O	-8.717	5.215	-1.67	*	-22.694	6.208	-3.66	***	7.231	5.221	1.38		-6.240	5.766	-1.08	
Cut-Off S	2.436	3.826	0.64		-7.819	5.808	-1.35		-5.659	5.226	-1.08		-6.814	4.372	-1.56	
IncomeQ1 (reference)																
IncomeQ2					-7.047	3.263	-2.16	**					48.661	4.536	10.73	***
IncomeQ3					-14.218	3.945	-3.60	***					64.289	4.721	11.24	***
IncomeQ4					-17.162	4.331	-3.96	***					109.457	8.305	13.18	***
*Random*IncomeQ2*					5.688	6.534	0.87						-3.277	8.650	-0.38	
*Random*IncomeQ3*					20.704	8.239	2.51	**					39.405	10.765	3.66	***
*Random*IncomeQ4*					16.360	8.518	1.92	*					35.703	14.341	2.49	**
*Cut-Off Opt*IncomeQ2*					9.881	5.714	1.73	*					9.390	10.006	0.94	
*Cut-Off Opt*IncomeQ3*					17.146	5.809	2.95	**					13.369	10.471	1.28	
*Cut-Off Opt*IncomeQ4*					20.882	5.731	3.64	***					26.973	9.205	2.93	**
*Cut-Off*IncomeQ2*					16.536	5.174	3.20	***					10.507	7.400	1.42	
*Cut-Off*IncomeQ3*					18.192	6.213	2.93	**					23.238	8.338	2.79	**
*Cut-Off*IncomeQ4*					5.064	6.900	0.73						-14.865	11.531	-1.29	
Tax awareness	0.169	0.128	1.32		0.149	0.128	1.17		-0.068	0.148	-0.46		0.050	0.122	0.41	
Acceptable tax rate	-0.092	0.333	-0.28		-0.771	0.337	-0.23		0.031	0.287	0.11		0.109	0.232	0.47	
Aggressiveness	-0.132	0.066	-2.01	**	-0.135	0.064	-2.09	**	-0.099	0.087	-1.13		-0.075	0.070	-1.08	
Need for audit	0.167	0.114	1.47		0.186	0.114	1.62		0.187	0.140	1.34		0.118	0.123	0.96	
Satisfaction with public services	-0.195	0.171	-1.14		-0.172	0.171	-1.01		-0.039	0.170	-0.23		-0.087	0.148	-0.59	
Risk appetite	-0.009	0.058	-0.17		-0.013	0.058	-0.24		0.002	0.066	0.04		-0.008	0.057	-0.15	
Decision time	0.174	0.120	1.45		0.237	0.120	1.97	**	-0.686	0.281	-2.44	**	-0.559	0.264	-2.11	
Male	-7.391	4.183	-1.77	*	-7.353	4.208	-1.75	*	6.063	3.981	1.52		5.009	3.753	1.33	
Audit (t-1)	-2.823	1.759	-1.60		-2.864	1.699	-1.69	*	5.427	4.503	1.21		6.135	3.467	1.77	
Penalty (t-1)	-0.113	0.033	-3.35	***	-0.107	0.033	-3.21	**	0.035	0.083	0.42		0.073	0.075	0.97	
Number of observations		2546				2546				2546				2546		
Wald chi^2		71.32				208.97				28.88				1841.23		
Prob. ＞ chi^2		0.000				0.000				0.006				0.000		
R^2		0.101				0.132				0.008				0.243		

Note: * *p*<0.10, ****p*<0.05, and ****p*<0.01.

Table A4. Post-estimation

		Chi^2 values of post estimation test for linear hypothesis: Coefficient[Mechanism *row*]+ Coefficient[Mechanism row*Income Q*column*]=0 (vs. LIRA)			
		IncomeQ1	*IncomeQ2*	*IncomeQ3*	*IncomeQ4*
Model B	*Random*	13.74***	7.58***	1.71	3.30*
	Cut-Off O	13.36***	4.01**	0.78	0.09
	Cut-Off S	1.81	2.85*	4.85**	0.38
Model D	*Random*	9.81***	5.53***	7.41***	2.02
	Cut-Off O	1.17	0.21	0.61	3.,19*
	Cut-Off S	2.43	0.31	4.33**	3.56*

Note: * p<0.10, ***p<0.05, and ***p<0.01.