EC2106 PUBLIC ECONOMICS
LECTURE 7 - Tax avoidance and tax evasion

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Fall 2022

Anatomy of Responses to Tax Changes

- In response to a tax increase, economic agents can engage in:

(i) **real responses**.
  - Example: tax on labor income $\Uparrow \Rightarrow$ Work $\Downarrow$ (if substitution effect dominates income effect).
  - Most of the responses we discuss fall in this category.

(ii) **reporting responses 1: Tax avoidance**.
  - Example: tax on labor income $\Uparrow \Rightarrow$ Business owners shift from paying labor income to themselves to paying more dividends (to themselves). **Legal behavior.**

(ii) **reporting responses 2: Tax evasion**.
  - Example: tax on labor income $\Uparrow \Rightarrow$ Agents shift from paying labor income to themselves to work in informal, black market. **Illegal behavior.**

Slemrod's hierarchy of responses

- (Joel Slemrod – famous Public Economist.)

- Agents will first engage in **reporting responses**.

- Only in absence of such opportunities, they engage in **real responses**.

- When do we expect reporting responses to be more prevalent?

  1. Narrow tax base meaning that the basis for taxation has loopholes.

  2. Self-reporting of tax base, (and not third-party reporting).

  3. Low enforcement of tax evasion (low penalties or few audits).

  4. Stakes are high. Rich individuals hire tax lawyers to **minimize tax payments**.

- How do the **distortionary effects** vary depending on the type of responses?

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Distortionary effects and agenda

- In general: Behavioral responses to taxes $\Uparrow$ $\Rightarrow$ Welfare cost of taxation $\Uparrow$.
    - Intuition: If production falls a lot when taxes $\Uparrow$, welfare is lost for society.

- But: welfare costs also depend on nature of responses.
    - Welfare losses may actually decline with reporting responses.

- **Today:**

- Four empirical papers on tax **avoidance** and **evasion**.

Application: Kopczuk and Slemrod (2003), Dying to Save Taxes

- What is the impact of taxation on timing of economic decisions?

- Example: US government announced in 1986 that it would install higher capital gains taxes from January 1 in 1987.

- **Capital gains:** Difference between value of assets when sold and when purchased.

- Realizations of capital gains spiked before 1987 to avoid higher taxes.

Deaths and the Estate Tax

- Kopczuk and Slemrod focus on the **estate tax** and how changes in the tax affects death rates.

- Many countries tax the **transaction from a deceased to an heir**.

(i) **Estate tax:** tax payer is the deceased.

(ii) **Inheritance tax:** tax payer is the heir.

- Setting:

- In 1916, the estate tax was progressive. With highest marginal tax rate of 10 % on estates above $ 50,000,000.

- From 1932, the top tax rates increased sequentially to 77 %. Stayed at that level until 1977.

Research question

Q: How do prospective estate tax payers act to announced tax reforms?

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Research question

Q: How do prospective estate tax payers act to announced tax reforms?

- Potential responses:
    - Time their death
    - **Manipulate time of death (ex post)**

- Research Design:
    - Exploit tax increases and decreases +
    - Plenty of days between signed policy and implementation of reform.

        → Sufficent time for people to prepare for the policy change?

Deaths Around Reform

TABLE 1.—AVERAGE NUMBER OF DECEDENTS DYING WITHIN 1, 3, 7, AND 14 DAYS OF TAX REFORMS

Reform Date		Day of Reform		Within 1 Day	Within 3 Days	Within 7 Days	Within 14 Days
03/03/1917	I	28	Before	27	24.67	23.86	24.93
			After	23	23.00	20.57	22.21
			t-Stat.	0.55	0.40	1.20	1.41
			p-Value	0.29	0.35	0.12	0.08
10/04/1917	I	12	Before	23	19.33	21.14	20.00
			After	20	15.67	19.43	18.86
			t-Stat.	0.43	0.91	0.65	0.61
			p-Value	0.33	0.18	0.26	0.27
02/24/1919	D	21	Before	36	29.67	27.14	28.21
			After	35	33.00	31.00	29.93
			t-Stat.	0.11	0.63	1.11	0.70
			p-Value	0.46	0.27	0.14	0.24
06/02/1924	I	36	Before	35	31.67	33.29	30.64
			After	29	31.00	33.57	31.64
			t-Stat.	0.80	0.15	0.10	0.50
			p-Value	0.21	0.44	0.46	0.31
02/26/1926	D	16	Before	23	20.33	18.57	18.43
			After	17	19.00	19.71	20.86
			t-Stat.	0.97	0.37	0.49	1.47
			p-Value	0.17	0.36	0.31	0.07
06/06/1932	I	10	Before	9	7.67	9.14	10.14
			After	15	10.33	9.57	9.50
			t-Stat.	−1.23	−0.95	−0.23	0.49
			p-Value	0.89	0.83	0.59	0.31
05/10/1934	I	26	Before	20	24.67	26.71	28.00
			After	24	23.67	24.86	24.29
			t-Stat.	0.57	0.25	0.70	1.97
			p-Value	0.29	0.40	0.24	0.03
08/30/1935	I	28	Before	26	28.00	26.29	25.29
			After	21	24.00	25.29	26.64
			t-Stat.	0.74	1.03	0.39	−0.75
			p-Value	0.23	0.15	0.35	0.77

Deaths Around Reform Conditional on Potential Tax Savings

TABLE 4.—PROBABILITY OF DYING IN THE LOW-TAX REGIME AS A FUNCTION OF POTENTIAL TAX SAVING

Reform Date	Deaths in High- and Low-Tax Regimes	Independent Variable					
		Log of Absolute Saving (1945 $)	Constant	Relative Tax Saving	Constant	Absolute Tax Saving (1945 $)	Constant
All (except 1980s)	3954	0.0173**	−0.0109	1.3857**	0.0098	0.0004	0.0280**
	4155	(0.0074)	(0.0228)	(0.6976)	(0.0176)	(0.0003)	(0.0141)

Assessment

- What are the follow-up questions to this study? Potential caveats?

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Assessment

- What are the follow-up questions to this study? Potential caveats?

- Want to know reason for death.

    1. **Tax avoidance**.

       Suicides, accidents at the "right" side of the estate tax reform.

    2. **Tax evasion**.

       Hospitals/doctors misreporting the death date.

- Would have liked a **bunching approach**.

Seim, 2017: Behavioral Response to the Annual Wealth Tax.

- **What are the effects of an annual wealth tax?**

  Focus on efficiency:
  > Elasticity of taxable wealth w.r.t. net-of-tax rate.

- **Anatomy of Responses**

  Does the wealth tax deter savings or trigger avoidance and evasion?

- **Motivation:**
  - Economic growth intimately related to wealth accumulation.

  - Assesses effectiveness of the tax.

The Swedish Wealth Tax

Marginal tax rate of 1.5 %, with an exemption threshold.

Filed annually, for 1946-2006.

Year	Tax Rev. (% of gov. rev.)	Tax Payers (%)	Threshold, 1000 SEK	
			Singles	Couples
2000	1.0	7.7	900	900
2001	0.8	5.3	1000	1500
2002	0.5	2.3	1500	2000
2003	0.7	3.5	1500	2000
2004	0.7	3.6	1500	2000
2005	0.6	2.5	1500	3000
2006	0.7	3.0	1500	3000

Recall: The connection between bunching and elasticities

From net-of-tax elasticity of taxable net wealth:

$$\varepsilon_{W,1-\tau} = \frac{\mathrm{d}z}{z} \frac{1-\tau}{\mathrm{d}\tau}$$

$$\frac{\mathrm{d}z}{z} = \varepsilon_{W,1-\tau} \frac{\mathrm{d}\tau}{1-\tau}$$

$\mathrm{d}\tau$: difference in tax rates between the two sides of the kinks.

Use expression for B and $h(z^*)$ to obtain:

$$\frac{B}{h(z^*) z^*} = \varepsilon_{W,1-\tau} \frac{\mathrm{d}\tau}{1-\tau}$$

Distribution of Taxable Net Wealth
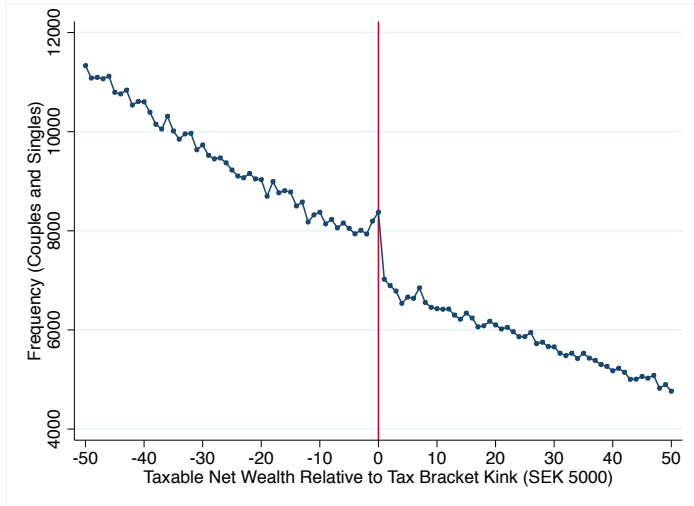
Estimating Bunching - Two Alternative Methods

- Need counterfactual density!

- How to obtain it?

I **Parametric approach**

   Estimate the counterfactual density as a polynomial excluding
   regions around the kink.

Method I
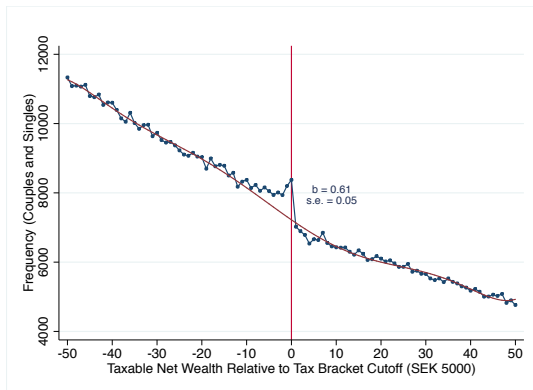
Fit a polynomial to the distribution excluding points close to the kink.

Add mass to the right of the kink so the integration constraint is satisfied.

Method I, Imputation
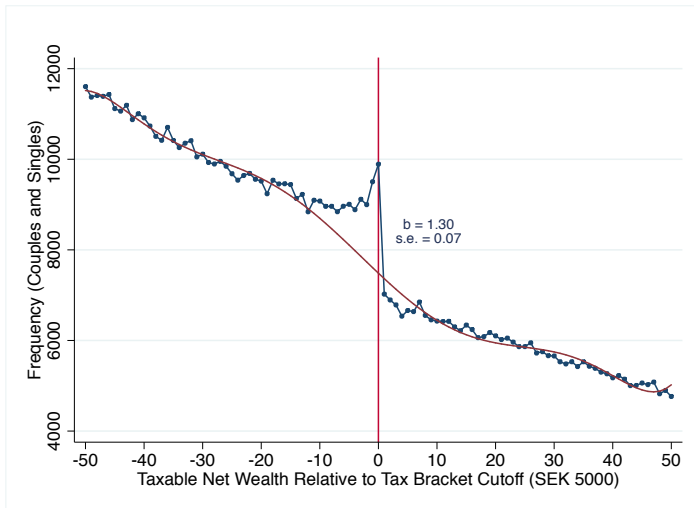
Estimated Elasticities of Taxable Net Wealth

	Parametric				Non-parametric			
	$\hat{b}$	$\varepsilon_{W,1-\tau}$	$\hat{b}^{IM}$	$\varepsilon_{W,1-\tau}^{IM}$	$\hat{b}$	$\varepsilon_{W,1-\tau}$	$\hat{b}^{IM}$	$\varepsilon_{W,1-\tau}^{IM}$
All	0.61	0.13						
Couples	0.60	0.12						
Singles	0.62	0.13						
High IQ	0.49	0.10						
Low IQ	0.42	0.09						

Estimated Elasticities of Taxable Net Wealth

| | Parametric | | | | Non-parametric | | | |
	$\hat{b}$	$\varepsilon_{W,1-\tau}$	$\hat{b}^{IM}$	$\varepsilon_{W,1-\tau}^{IM}$	$\hat{b}$	$\varepsilon_{W,1-\tau}$	$\hat{b}^{IM}$	$\varepsilon_{W,1-\tau}^{IM}$
All	0.61	0.13	1.30	0.27				
Couples	0.60	0.12	1.31	0.27				
Singles	0.62	0.13	1.29	0.27				
High IQ	0.49	0.10	0.93	0.19				
Low IQ	0.42	0.09	0.66	0.14				

Bunching at 2001 Kink vs Bunching at Placebo Kinks, Couples
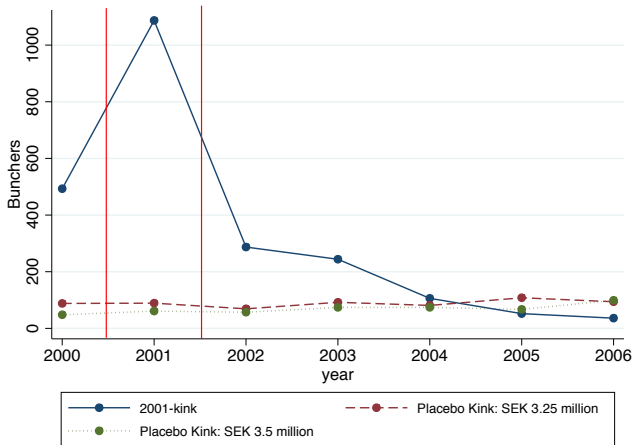
Bunching at 2002-2004 Kink vs Bunching at Placebo Kinks, Couples
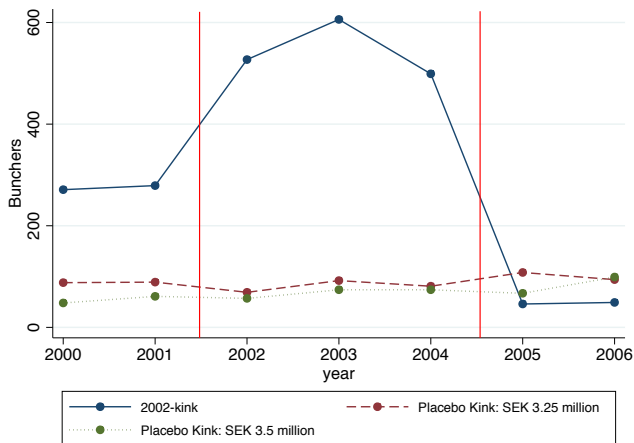
Bunching at 2005-2006 Kink vs Bunching at Placebo Kinks, Couples
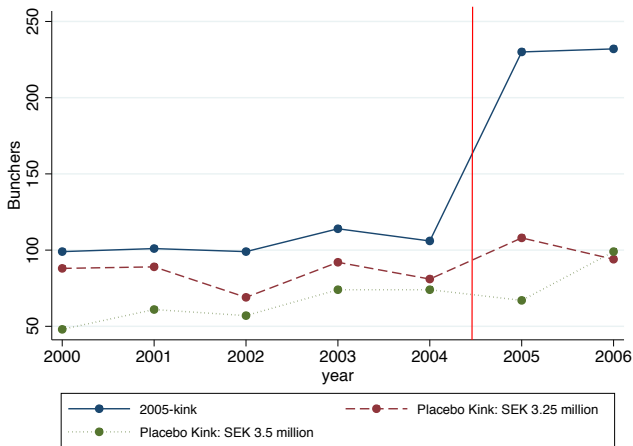
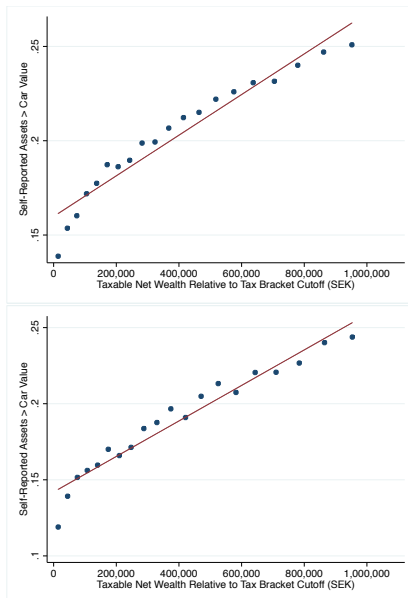# Reporting Responses – Are assets truthfully reported?

Cross-check self-reported assets against car register.

Registered value of cars: lower bound on individual's non-third party reported assets.

If reported assets lower than registered car value: evidence of evasion.

Compute fraction of individuals who reported assets > car value

All Cars / New Cars

Conclusion

- **Tax elasticity of taxable net wealth**

  Evidence of bunching at the threshold. Elasticities within $[0.1, 0.3]$.

- **Sheltering rather than real responses.**

  No evidence of real savings responses.

  No evidence of avoidance.

  Cross-checking self-reported assets against administrative records suggests households evade the tax.

How to raise tax compliance?

- Pecuniary fines.

- Imprisonment.

- Shaming Tax Delinquents?
    - Tax delinquencies = debt owed to tax agencies by citizens.

- In Bangalore, India, the city hires drummers to visit tax evaders and **bang the drum** if they refuse to pay.

How to raise tax compliance?

Shaming Tax Delinquients (Perez-Truglia and Troiano, 2021)

- Sampled 34 334 tax delinquents from three US states.
- Owed tax payments ranging from $250 to $150 000 (median of $5 500).

  Had been delinquent for an average of 2.7 years.

- **Randomized Control Trial:** Sent letters in three arms.
  1. Shaming incentives.
     - T: Neighbors will learn about the tax delinquent list.
     - C: Only *you* from that neighborhood learned list.

  2. Salience of penalty.
     - T: Informed of tax debt **with** the amount due.
     - C: Informed of tax debt **without** the amount due.

  3. Norms. Informed of taxes due of others.
     - T: Taxes due of others is high.
     - C: Taxes due of others is low.

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- Passcode:

Effects 10 weeks after letters

a. Effect of Higher Visibility
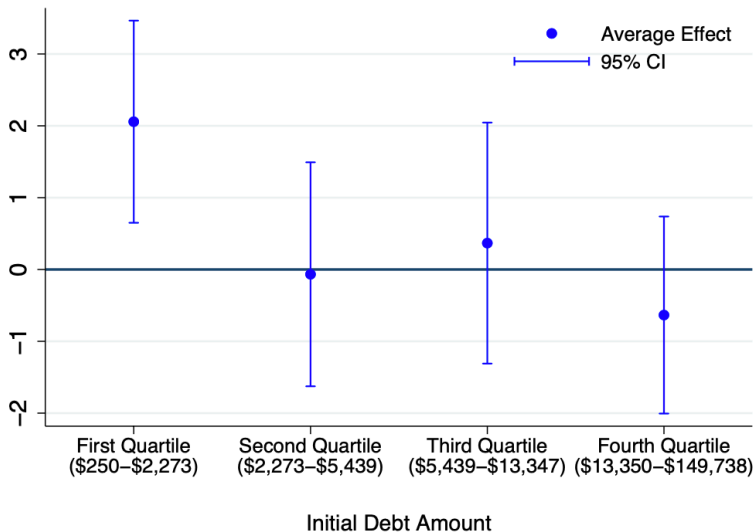
Effects 10 weeks after letters

- Why only effects for moderately sized debt?

- Vernon tax commissioner:

  When you are talking about large debts, you do tend to get some people who just don't care. It's just not worth paying off their $450,000 or $1.2 million debt. Down on the lower levels, you get more of the Average Joe who is concerned.

Effects 10 weeks after letters

b. Effect of Financial Reminder

- Average Effect
- 95% CI

Initial Debt Amount

First Quartile ($250–$2,273), Second Quartile ($2,273–$5,439), Third Quartile ($5,439–$13,347), Fourth Quartile ($13,350–$149,738)
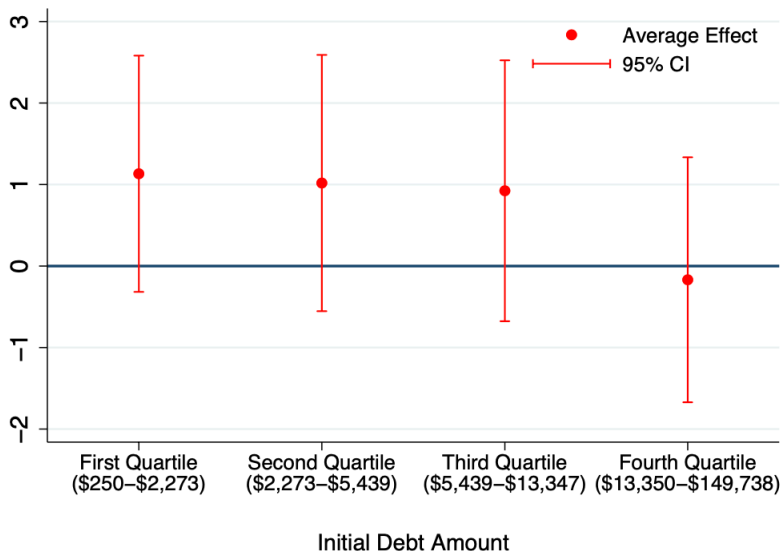
Effects 10 weeks after letters

c. Effect of Peer Information

Initial Debt Amount
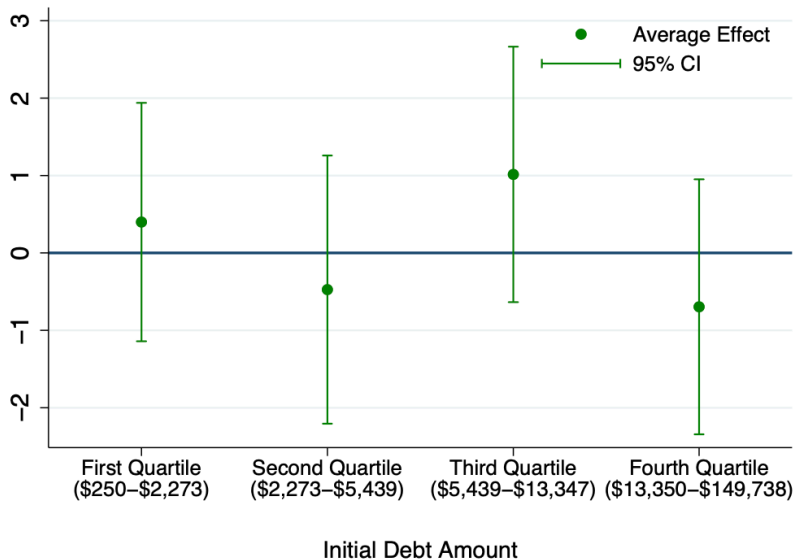
Why is tax evasion so low in OECD countries?

- **Puzzle:** Audit rate in US low ($p = 0.01$); fines low (0.2) + reasonable risk aversion

  $\rightarrow$ much more evasion than we see.

  Why?

1. **Unwilling to cheat:** Social norms and morality (people like being honest and voluntarily pay).

2. **Unable to cheat:** Third-party reporting makes it much harder to cheat.

Application: Audit Experiment in Denmark

- Kleven et al. (2011): "Unwilling or Unable to Cheat? Evidence from a Tax Audit Experiment in Denmark", Econometrica.

- Focus on self-reported and 3rd-party reported income.

    Self-employed individuals report taxable income themselves to Tax Authorities.

    For employees, employers report taxable income to Tax Authorities (3rd-party reporting).

- Formal model of tax evasion with predictions on evasion behavior with this distinction.

    Empirical test of predictions using field experiment with Danish Tax Authorities.

Formal Model of Tax Evasion

- Agents have

    $\bar{y}$ - true income

    y - reported income

  with $e = \bar{y} - y$ begin the degree of underreporting.

- Individuals face a probability of being audited and detected for tax evasion according to $p(e)$, where $p'(e) > 0$.

- Individuals maximize expected utility:

$$U = (1 - p(e))(\bar{y}(1 - \tau) + \tau e) + p(e)(\bar{y}(1 - \tau) - \theta \tau e)$$

They pay tax τ on reported income, and gain τe if not caught, but need to pay a penalty $\theta \tau e$ in case they do get caught.

- In an interior optimum:

$$p(e)(1 + \theta)(1 + \varepsilon(e)) = 1$$

where $\varepsilon(e) = \frac{p'(e)e}{p(e)}$ is the elasticity of the detection probability with respect to evasion.

Income Decomposition

True income $\bar{y} = \bar{y}_t + \bar{y}_s$, where s is self-reported income and t is third-party reported income.
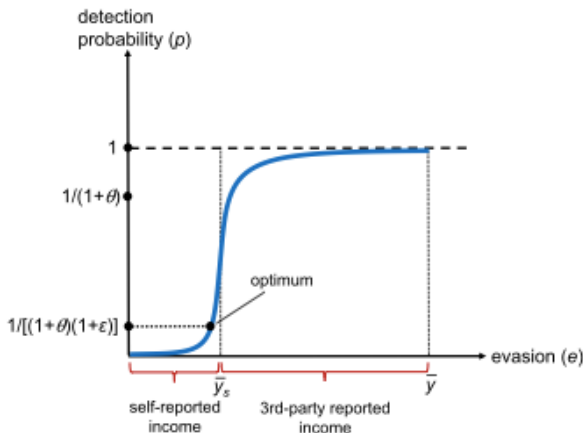
$p(e)$ is lower left of $\bar{y}_s$ than right of it, but $\varepsilon(e)$ is high.

In equilibrium, the optimal e will thus be to the left of $\bar{y}_s$.

Institutional Setup: Denmark

- Taxes paid on salaries, business earnings, transfers, gifts, capital income.

- Tax payers can make deductions: union fees, commuting costs, charitable contributions etc.

- In the beginning of each year, tax payers receive preprinted forms with all forms of income that are 3rd-party reported (e.g. reported by employers, banks, government etc).

- Then tax payers self-report adjustments (self-reported income).

- Tax Authority then generates audit flags on the final income declaration.

Experimental Design

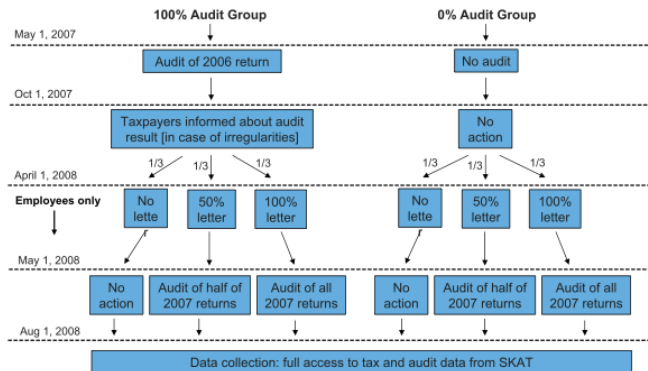- Sample of 25k employees and 18k self-employed.

- Timing:

TABLE II
AUDIT ADJUSTMENTS DECOMPOSITION[a]

		A. Total Income Reported				B. Third-Party vs. Self-Reported Income			
		Pre-Audit Income	Audit Adjustment	Under-reporting	Over-reporting	Third-Party Income	Third-Party Under-reporting	Self-Reported Income	Self-Reported Under-reporting
		1	2	3	4	5	6	7	8
I. Net Income and Total Tax									
Net income	Amounts	206,038	4532	4796	−264	195,969	612	10,069	4183
		(2159)	(494)	(493)	(31)	(1798)	(77)	(1380)	(486)
	% Nonzero	98.38	10.74	8.58	2.16	98.57	2.31	38.18	7.39
		(0.09)	(0.22)	(0.20)	(0.10)	(0.08)	(0.11)	(0.35)	(0.19)
Total tax	Amounts	69,940	1980	2071	−91				
		(1142)	(236)	(235)	(11)				
	% Nonzero	90.76	10.59	8.41	2.18				
		(0.21)	(0.22)	(0.20)	(0.10)				

TABLE II—*Continued*

		A. Total Income Reported				B. Third-Party vs. Self-Reported Income			
		Pre-Audit Income	Audit Adjustment	Under-reporting	Over-reporting	Third-Party Income	Third-Party Under-reporting	Self-Reported Income	Self-Reported Under-reporting
		1	2	3	4	5	6	7	8
III. Income Components (Continued)									
Stock income	Amounts	5635	259	281	−22	3783	30	1852	251
		(1405)	(45)	(45)	(8)	(976)	(12)	(943)	(43)
	% Nonzero	22.47	0.95	0.80	0.15	22.44	0.07	2.45	0.75
		(0.30)	(0.07)	(0.06)	(0.03)	(0.30)	(0.02)	(0.11)	(0.06)
Self-employment	Amounts	10,398	1544	1633	−89	1164	4	9234	1630
		(812)	(280)	(279)	(26)	(177)	(2)	(816)	(279)
	% Nonzero	7.63	3.43	3.02	0.41	1.40	0.04	7.66	3.00
		(0.19)	(0.13)	(0.12)	(0.05)	(0.08)	(0.01)	(0.19)	(0.12)

B. Evasion by Fraction Income Self-Reported

Legend:
- 45 degree line
- Fraction evading
- Fraction evaded (evaders)
- Third-party evasion rate

X-axis: Fraction of income self-reported
Y-axis: Evasion rate
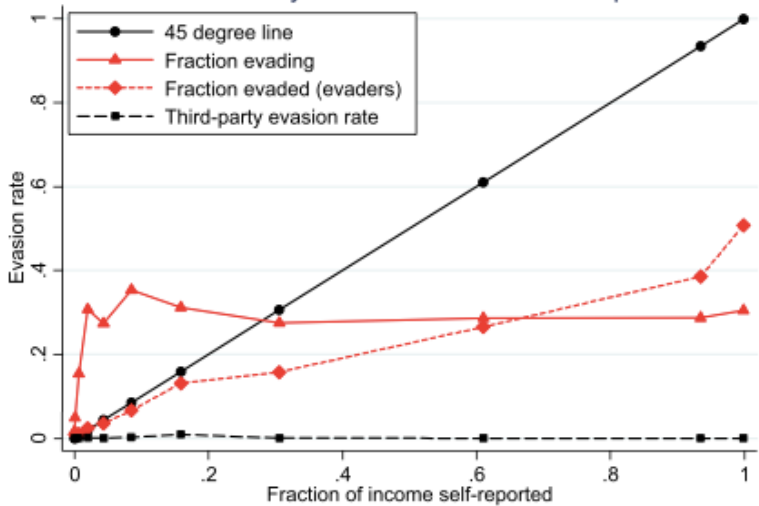
A. Self-Employed

Randomization of Letters

Three groups: (1) No letter, (2) Letter saying 50 % chance of audit, (3) Letter saying 100 % chance of audit.

Audit not the same as detection.

Only done on employees.

TABLE VI

TABLE VI

THREAT-OF-AUDIT LETTER EFFECTS ON INDIVIDUAL UPWARD ADJUSTMENTS TO REPORTED INCOME[a]

	No Letter Group	Differences Letter Group vs. No-Letter Group									50% Letter − No Letter	100% Letter − 50% Letter
	Both 0% and 100% Audit Groups	Both 0% and 100% Audit Groups			0% Audit Group Only			100% Audit Group Only			Both 0% and 100% Audit Groups	
	Baseline	Any Adjustment	Upward Adjustment	Downward Adjustment	Any Adjustment	Upward Adjustment	Downward Adjustment	Any Adjustment	Upward Adjustment	Downward Adjustment	Upward Adjustment	Upward Adjustment
	1	2	3	4	5	6	7	8	9	10	11	12
A. Average Amounts of Individual Upward Adjustments												
Net income	−497	94	84	10	74	77	−3	115	92	23	58	52
	(31)	(42)	(22)	(34)	(55)	(29)	(45)	(64)	(35)	(52)	(26)	(26)
Total tax	−322	67	50	17	57	46	11	77	54	23	32	36
	(24)	(32)	(18)	(26)	(43)	(24)	(34)	(49)	(28)	(39)	(21)	(21)
Number of obs.	9397	24,788	24,788	24,788	14,145	14,145	14,145	10,643	10,643	10,643	24,788	24,788
B. Probability of Upward Adjustments (in percent)												
Net income	13.37	1.63	1.56	0.07	2.29	1.52	0.76	0.98	1.60	−0.62	1.10	0.93
	(0.35)	(0.47)	(0.28)	(0.40)	(0.62)	(0.37)	(0.53)	(0.73)	(0.44)	(0.61)	(0.33)	(0.33)
Total tax	13.69	1.52	1.57	−0.05	2.03	1.65	0.37	1.02	1.49	−0.47	1.03	1.07
	(0.35)	(0.48)	(0.29)	(0.40)	(0.63)	(0.37)	(0.54)	(0.73)	(0.44)	(0.61)	(0.33)	(0.33)
Number of obs.	9397	24,788	24,788	24,788	14,145	14,145	14,145	10,643	10,643	10,643	24,788	24,788

What did we learn from this study?

Would policy recommendations would you give based on the study?

What more could be done?

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