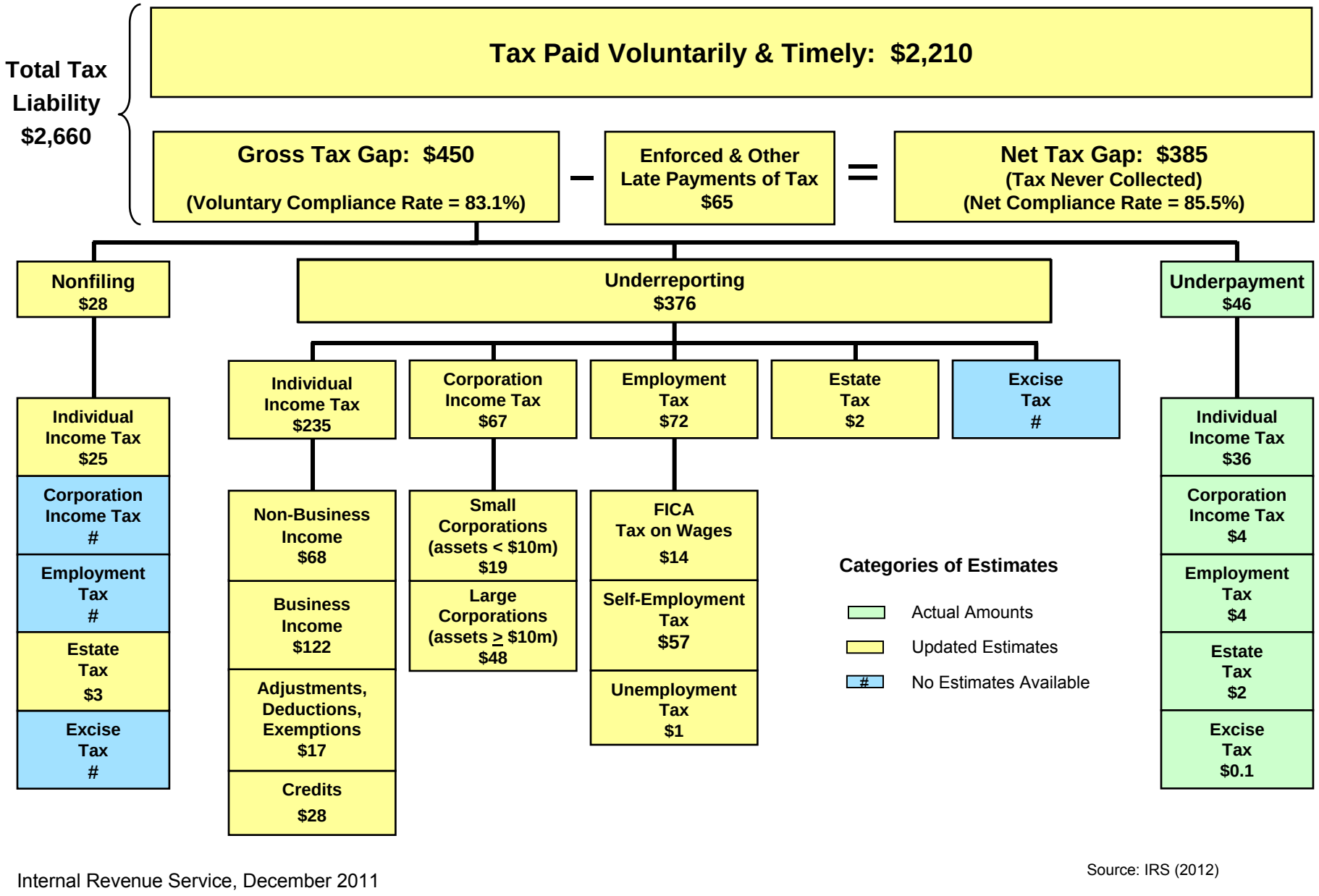
Tax Gap "Map"
Tax Year 2006 ($ billions)

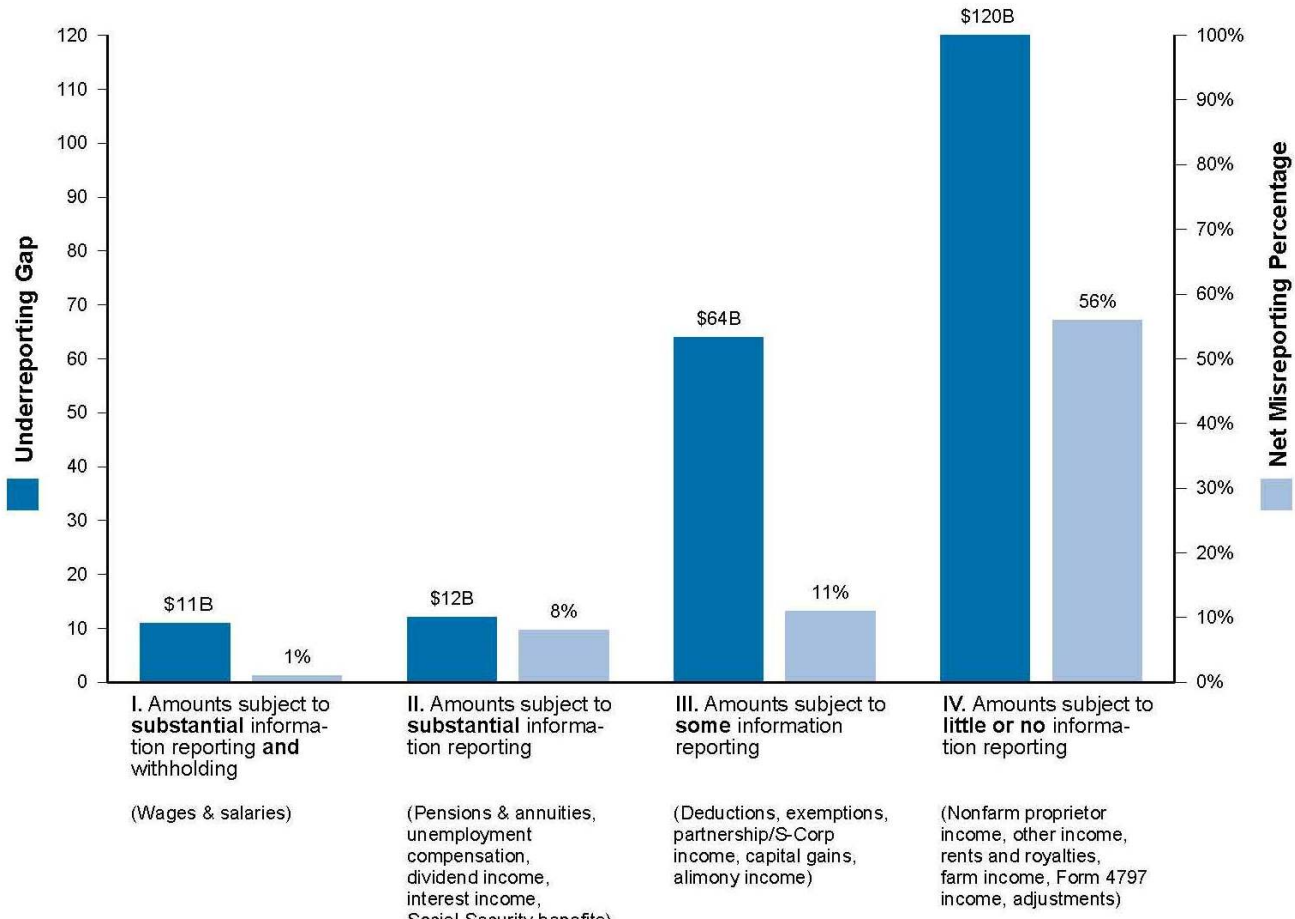


Internal Revenue Service, December 2011

Source: IRS (2012)

Chart 1: Effect of Information Reporting on Taxpayer Compliance

Tax Year 2006 Individual Income Tax Underreporting Gap and Net Misreporting Percentage, by "Visibility" Category



NOTE: Net Misreporting Percentage is defined as the net misreported amount of income as a ratio of the true amount.

Source: IRS (2012)

Internal Revenue Service, December 2011

	Either Letter					
	Federal Taxable Income			MN Tax Liability		
	Treated	Control	Treated–Control	Treated	Control	Treated–Control
1994	$26,927	$26,940	$–14	$1,946	$1,954	$–8
1993	$26,346	$26,449	$–103	$1,919	$1,934	$–15
1994–1993	$580	$491	$89(270)	$27	$20	$7(22)
% with 94–93 increase	54.3	53.9	0.4	52.8	52.3	0.5
n	31,149	15,624		31,149	15,624	

Notes:
Number in parentheses is the standard error.
The mean of "Treated–Control" may differ from the mean of "Treated" minus the mean of "Control" due to rounding error.

Source: Blumenthal et al. (2001), p. 131

Table 4
Average reported federal taxable income: differences in differences for the whole samp

Whole sample (weighted)

	Treatment	Control	Difference
1994	23,781	23,202	579
1993	23,342	22,484	858
94−93	439	717	−278
S.E.			464
%w/increase	54.4%	51.9%	2.5%***
n	1537	20,831	

Low income

	High opportunity		
	Treatment	Control	Difference
1994	7473	3992	3481
1993	971	787	183
94−93	6502	3204	3298
S.E.			2718
%w/increase	65.4%	51.2%	14.2%*
n	52	123	

Source: Slemrod et al. (2001), p.466

Self-Reported vs. Third-Party Reported Income

	Pre-audit net income			Under-reporting of income		
	Total	Third-party	Self-reported	Total	Third-party	Self-reported
Amount	**206,038**	**195,969**	**10,069**	**4,255**	**536**	**3,719**
	(2,159)	(1,798)	(1,380)	(424)	(80)	(416)
Percent	**98.38**	**98.57**	**38.18**	**8.39**	**1.72**	**7.28**
	(0.09)	(0.08)	(0.35)	(0.20)	(0.09)	(0.19)

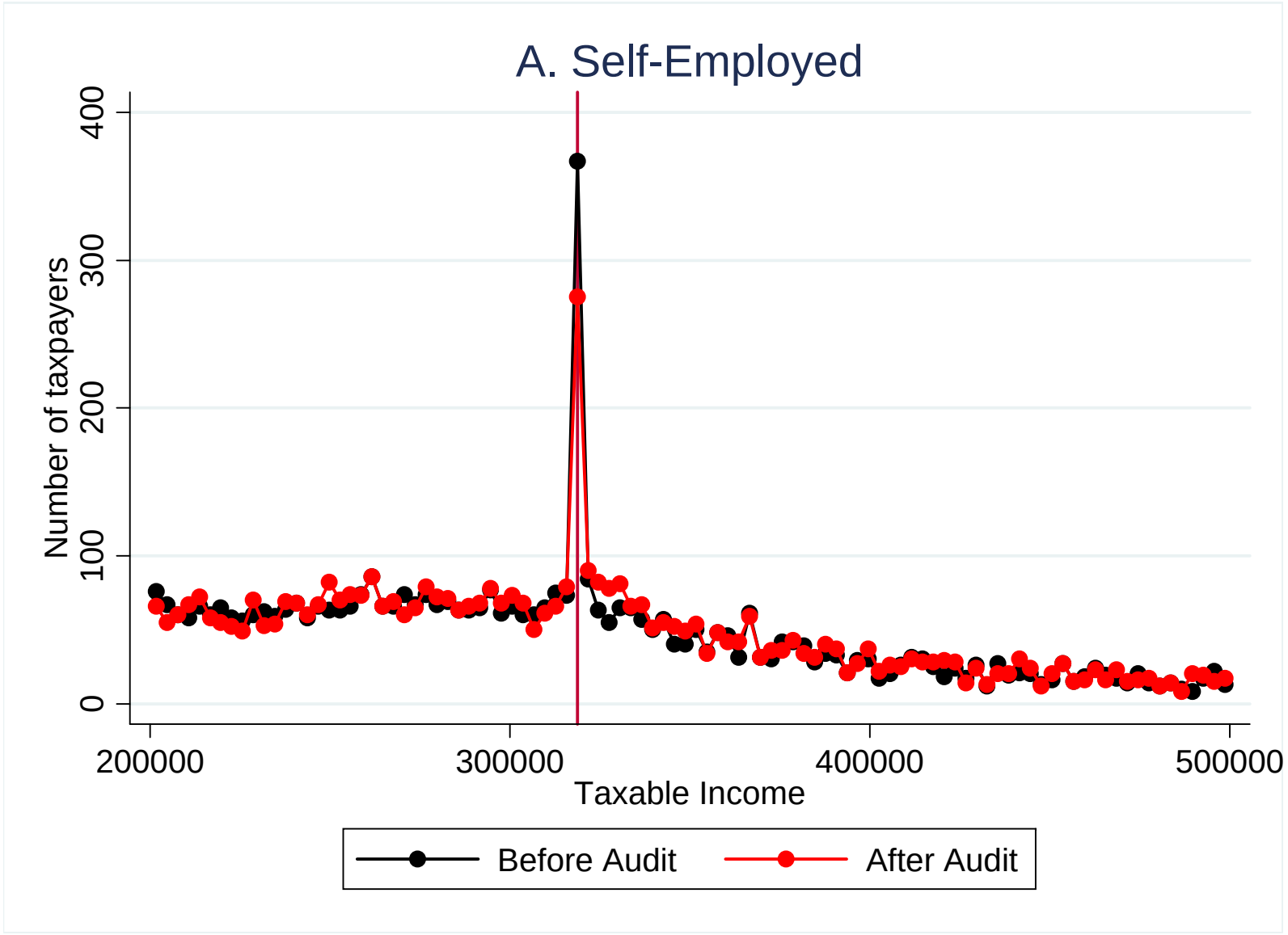
Source: Kleven et al. (2010)

Determinants of the Probability of Audit Adjustment: Social, Economic, and Information Factors

	Social factors		Socio-economic factors		Information factors		All factors	
Constant	**14.42**	(0.64)	**11.92**	(0.66)	**1.44**	(0.25)	**3.98**	(0.62)
Female	**-5.76**	(0.43)	**-4.45**	(0.45)			**-2.05**	(0.41)
Married	**1.55**	(0.46)	-0.36	(0.48)			**-1.64**	(0.44)
Member of church	**-1.98**	(0.59)	**-2.67**	(0.58)			**-1.19**	(0.54)
Copenhagen	-0.29	(0.67)	1.20	(0.67)			1.00	(0.62)
Age above 45	-0.37	(0.45)	-0.35	(0.45)			0.10	(0.42)
Home owner			**5.96**	(0.48)			-0.35	(0.46)
Firm size below 10			**4.43**	(0.82)			**2.97**	(0.76)
Informal sector			**3.25**	(0.86)			-0.99	(0.79)
Self-Reported Income					**9.47**	(0.53)	**9.72**	(0.54)
Self-Reported Income > 20K					**17.46**	(0.91)	**17.08**	(0.92)
Self-Reported < -10K					**14.63**	(0.72)	**14.53**	(0.72)
Audit Flag					**15.48**	(0.59)	**15.32**	(0.60)
R-square	**1.1%**		**2.1%**		**17.1%**		**17.4%**	
Adjusted R-square	**1.0%**		**2.1%**		**17.1%**		**17.4%**	

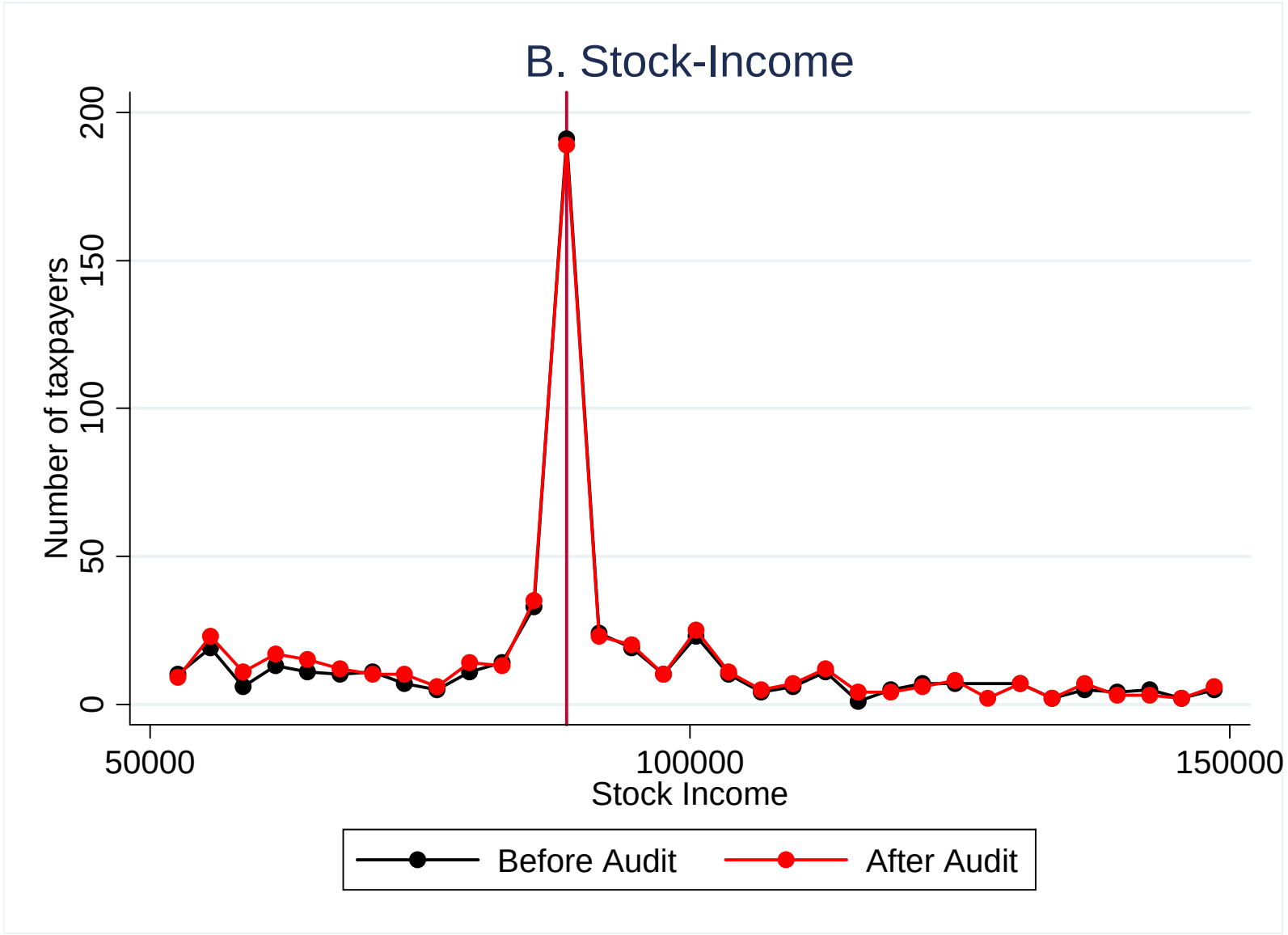
Source: Kleven et al. (2010)

Bunching at the Top Kink in the Income Tax



Source: Kleven et al. (2010)

Bunching at the Kink in the Stock Income Tax



Source: Kleven et al. (2010)

Effect of Audits on Subsequent Reporting

Amount of income change from 2006 to 2007

	Baseline audit adjustment amount	Difference: 100% vs. 0% audit group		
	Total income	**Total income**	**Self-reported income**	**Third-party income**
Net income	**5629**	**2554**	**2322**	232
	(497)	(787)	(658)	(691)
Total tax	**2510**	**1377**		
	(165)	(464)		

Source: Kleven et al. (2010)

Effect of Audit Threats on Subsequent Reporting

Probability of adjusting reported income (in percent)

	Both 0% and 100% audit groups			
	No-letter group	Difference: letter group vs. no-letter group		
	Baseline	Any adjustment	Upward adjustment	Downward adjustment
Net income	**13.37**	**1.65**	**1.51**	0.13
	(0.35)	(0.47)	(0.28)	(0.40)
Total tax	**13.67**	**1.56**	**1.54**	0.01
	(0.35)	(0.48)	(0.28)	(0.40)

Source: Kleven et al. (2010)

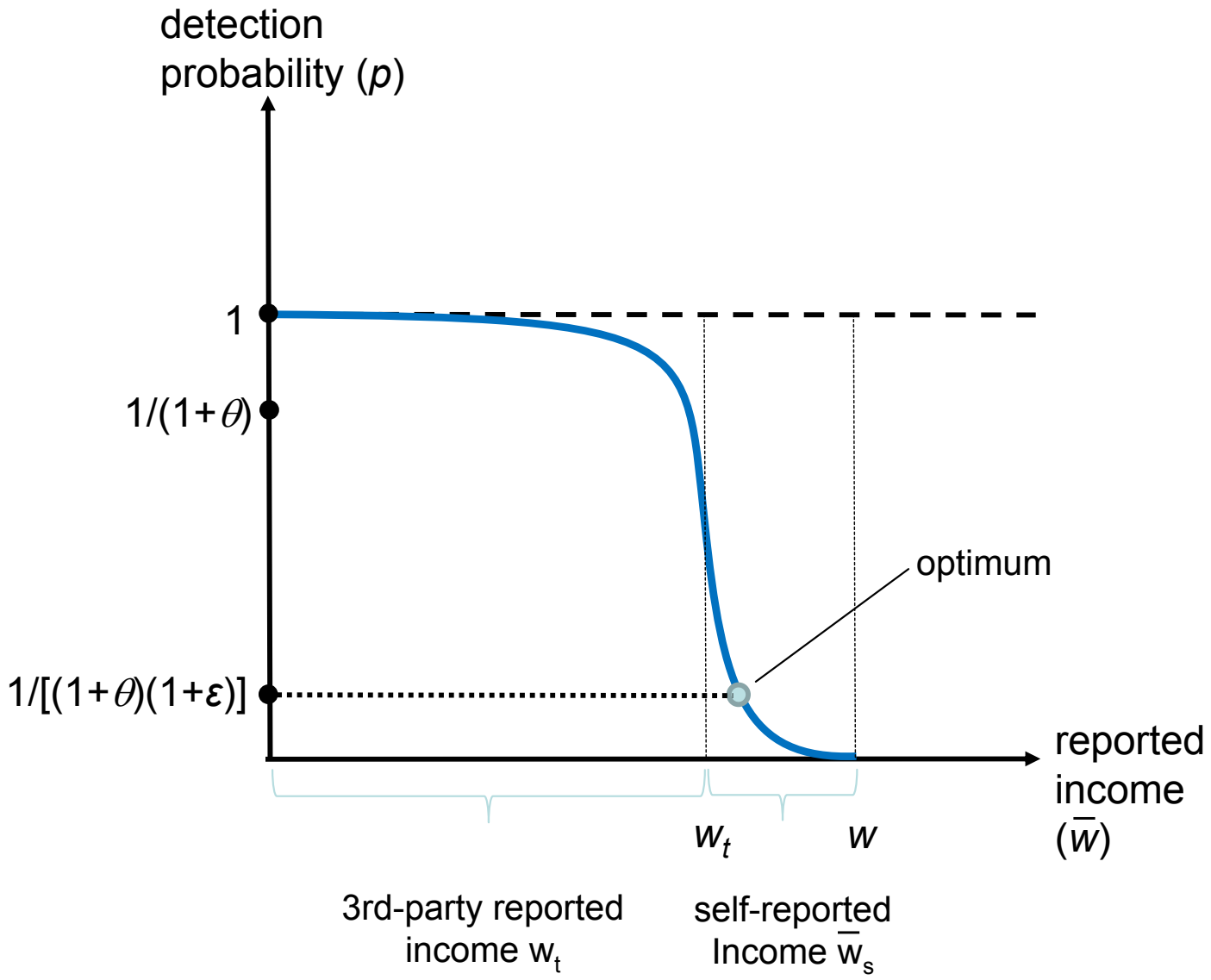
Effect of Audit Threats on Subsequent Reporting

Probability of upward adjustment in reported income (in percent)

	Both 0% and 100% audit groups		
	Letter – No Letter	**50% Letter – No Letter**	**100% Letter – 50% Letter**
Net income	**1.51**	**1.04**	**0.95**
	(0.28)	(0.33)	(0.33)
Total tax	**1.54**	**0.99**	**1.10**
	(0.28)	(0.33)	(0.33)

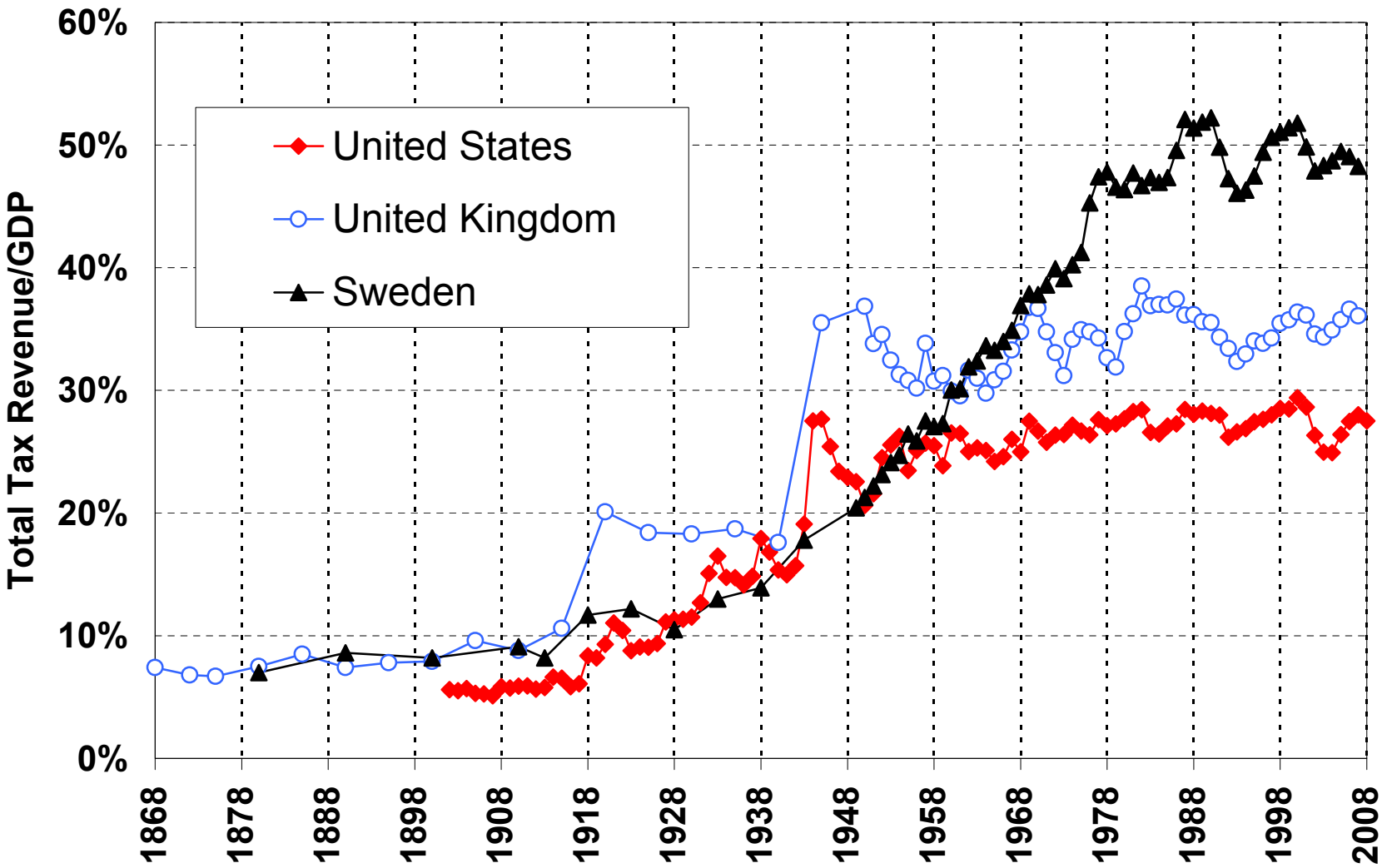
Source: Kleven et al. (2010)

Figure 1: Probability of Detection under Third-Party Reporting



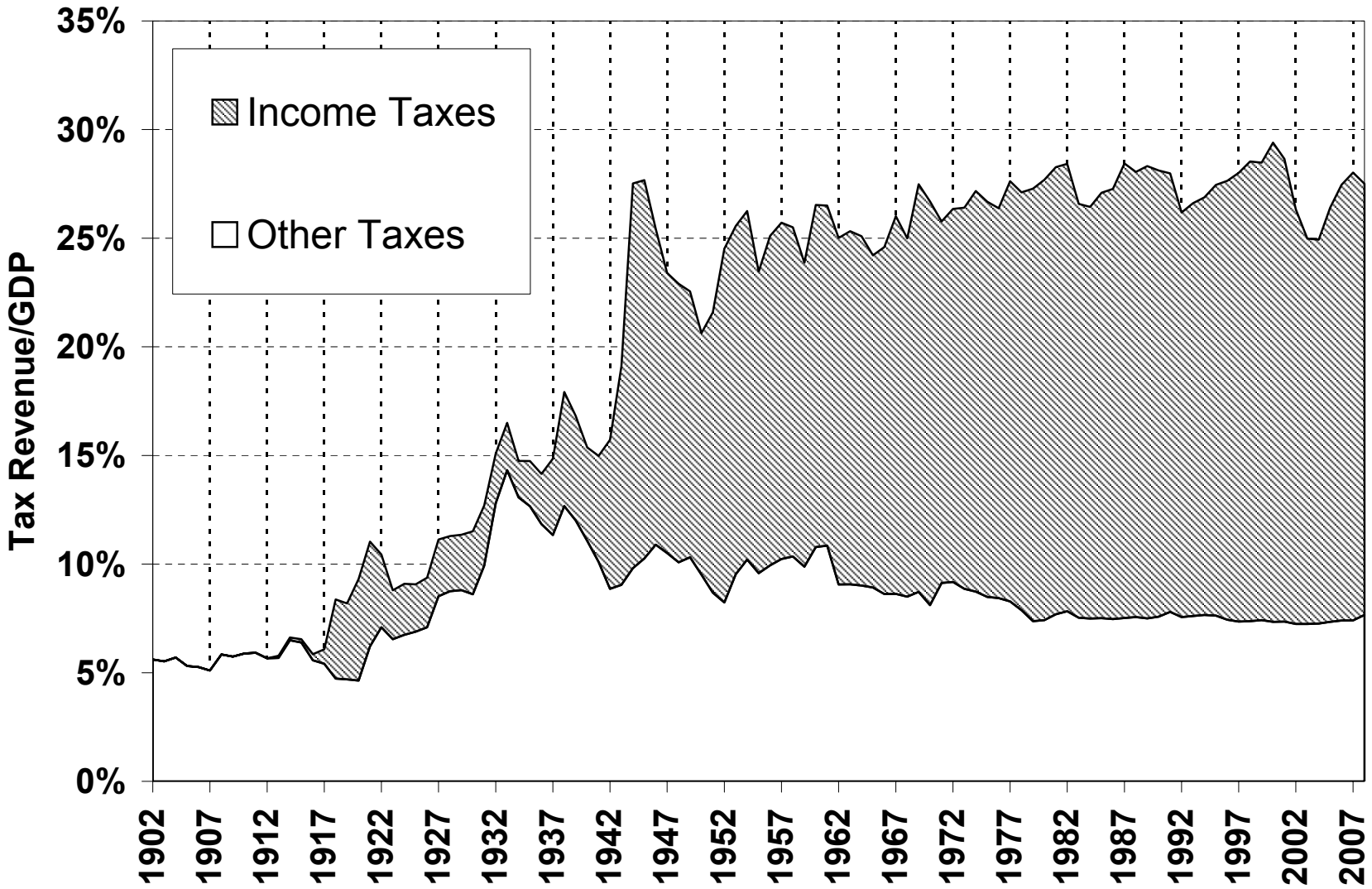
Source: Kleven et al. (2010)

2A. Tax revenue/GDP in the US, UK, and Sweden

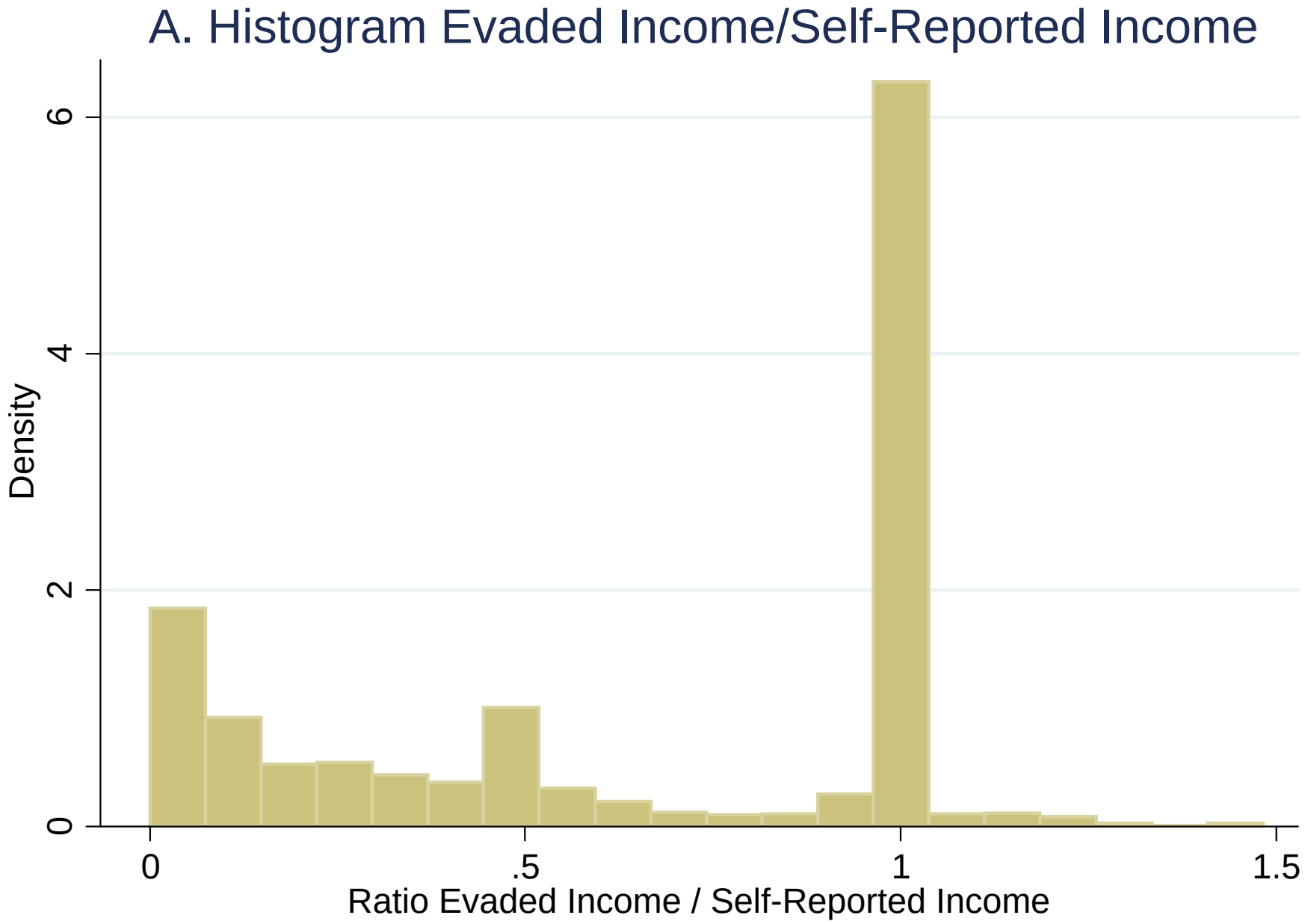


Source: statistics computed by the author

2B. US Tax Composition, 1902-2008



Source: statistics computed by the author


A. Histogram Evaded Income/Self-Reported Income
Density
0
2
4
6
0
.5
1
1.5
Ratio Evaded Income / Self-Reported Income

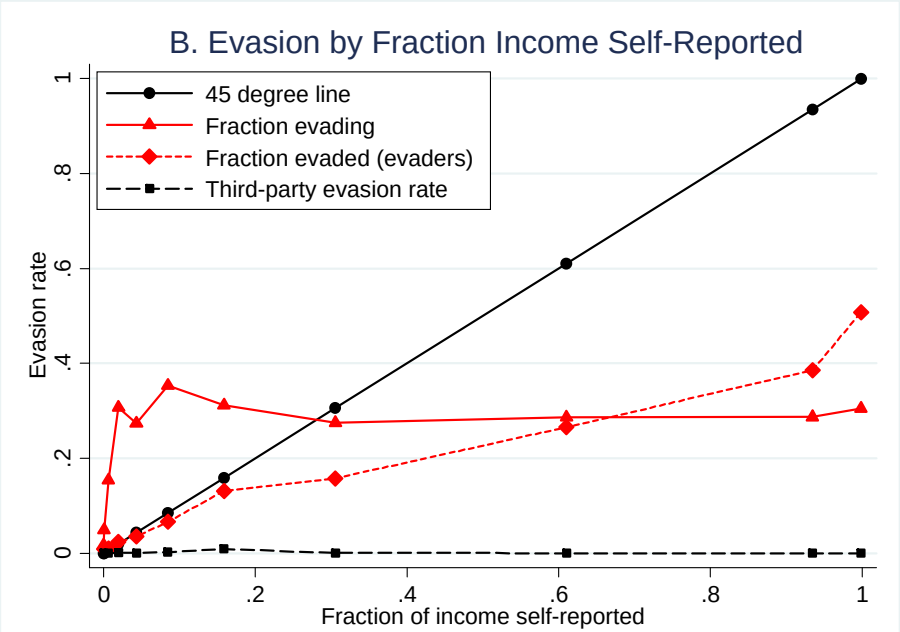


Figure 3. Anatomy of Tax Evasion

Panel A displays the density of the ratio of evaded income to self-reported income (after au

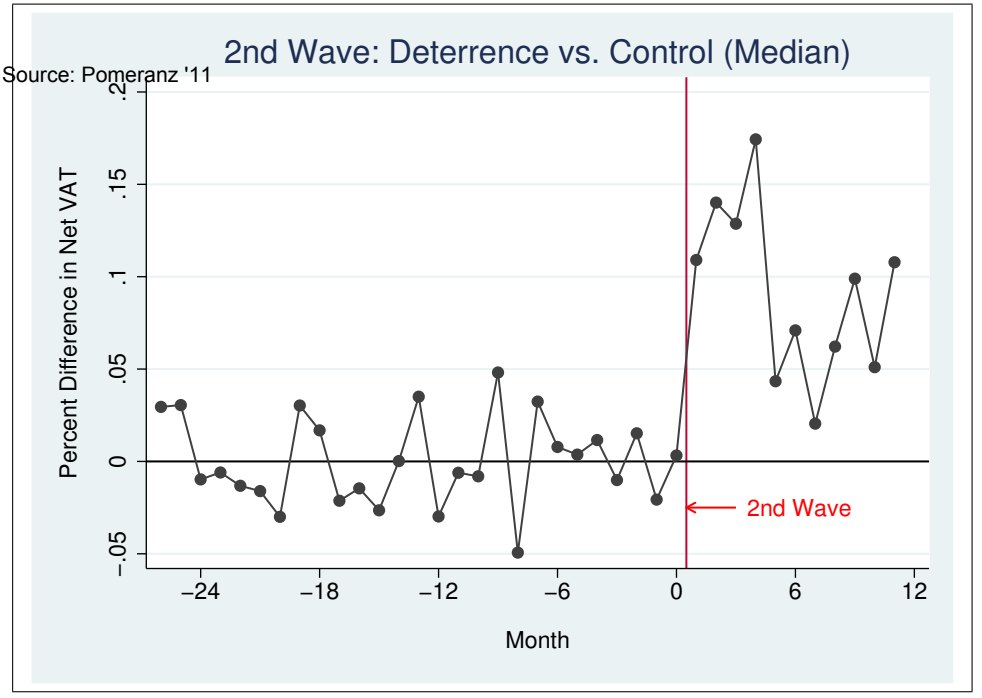
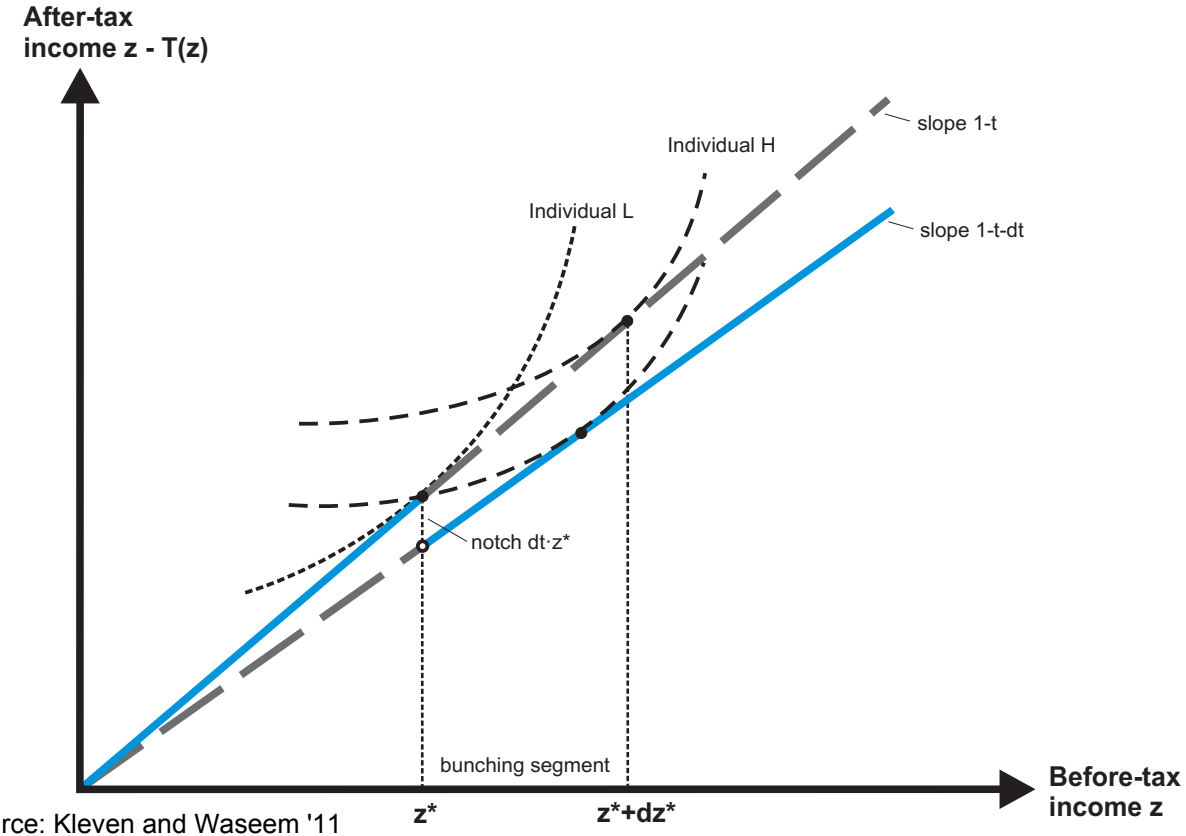


Figure A5: Impact of Deterrence Letter: Second Wave of Mailing

Notes: This figure plots the monthly percent difference between the medians of the treatment and the control group of the deterrence letter for the second wave of mailing: (median VAT treatment group - median VAT control group) / (median VAT control group), normalizing pre-treatment percent difference to zero. The y-axis indicates time, with monthly observations, and zero indicates the last month before the mailing of the letters. The vertical line marks mailing of the letters. The figure shows the first wave of mailing. Since the second wave of mailing is much smaller than the first, these figures show a much more noisy pattern.

FIGURE 1
Effect of Notch on Taxpayer Behavior

Panel A: Bunching at the Notch

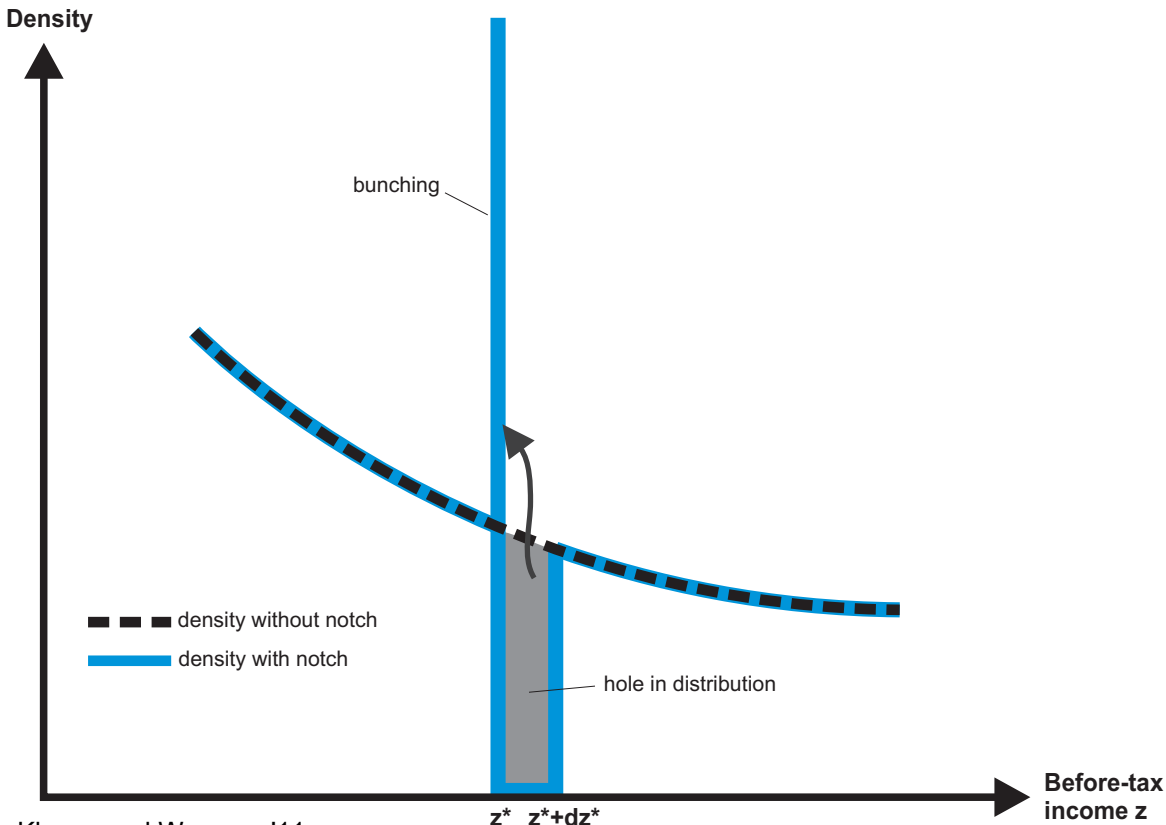


Source: Kleven and Waseem '11

FIGURE 2

Effect of Notch on Density Distribution

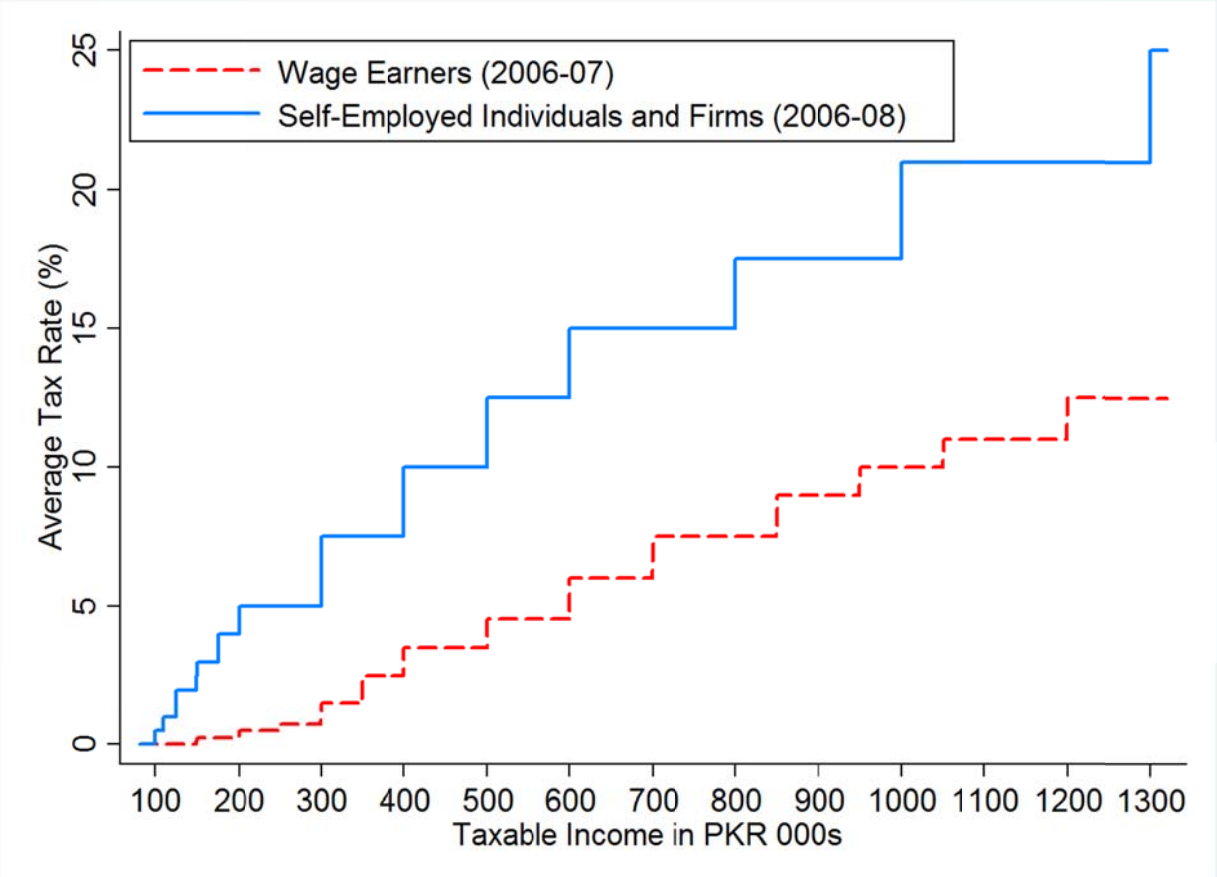
Panel A: Theoretical Density Distributions



Source: Kleven and Waseem '11

FIGURE 3

Personal Income Tax Schedules in Pakistan



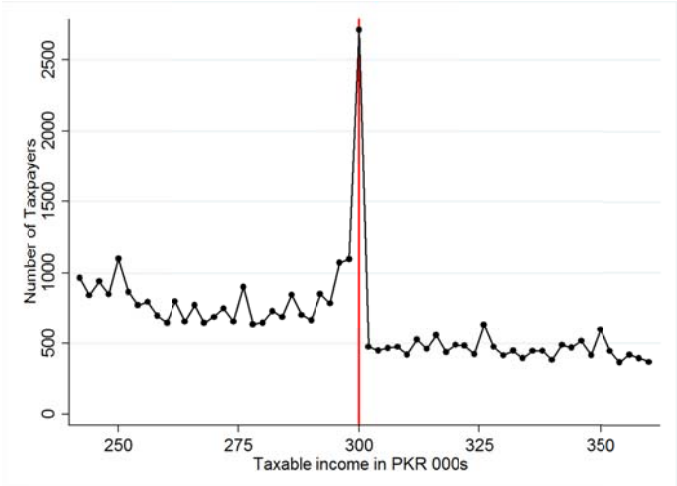
Notes: the figure shows the statutory (average) tax rate as a function of annual taxable income in the personal income tax schedules for wage earners (red dashed line) and self-employed individuals and unincorporated firms (blue solid line), respectively. Taxable income is shown in thousands of Pakistani Rupees (PKR), and the PKR-USD exchange rate is around 85 as of April 2011. The schedule for the self-employed applies to the full period of this study (2006-08), while the schedule for wage earners applies only to 2006-07 and was changed by a tax reform in 2008. The tax system classifies individuals as either wage earners or self-employed based on whether income from wages or self-employment constitute the larger share of total income, and then taxes total income according to the assigned schedule. The tax schedule for self-employed individuals and firms consists of 14 brackets, while the tax schedule for wage earners consists of 21 brackets (the first 14 of which are shown in the figure). Each bracket cutoff is associated with a notch, and the cutoff itself belong to the tax-favored side of the notch.

Source: Kleven and Waseem '11

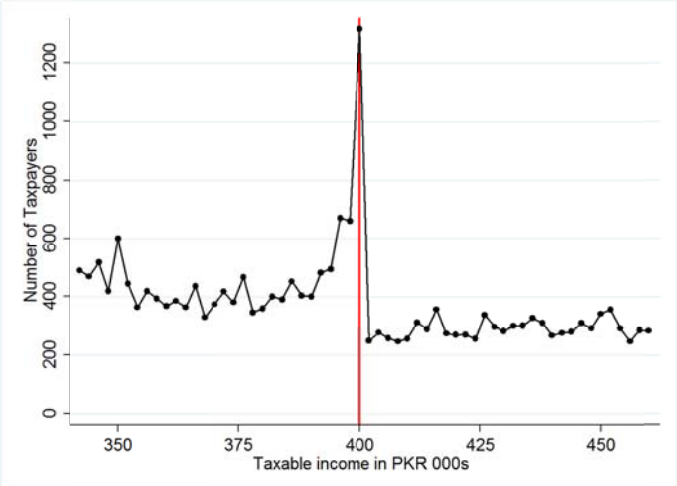
FIGURE 5

Density Distribution around Middle Notches:
Self-Employed Individuals and Firms (Sophisticated Filers)

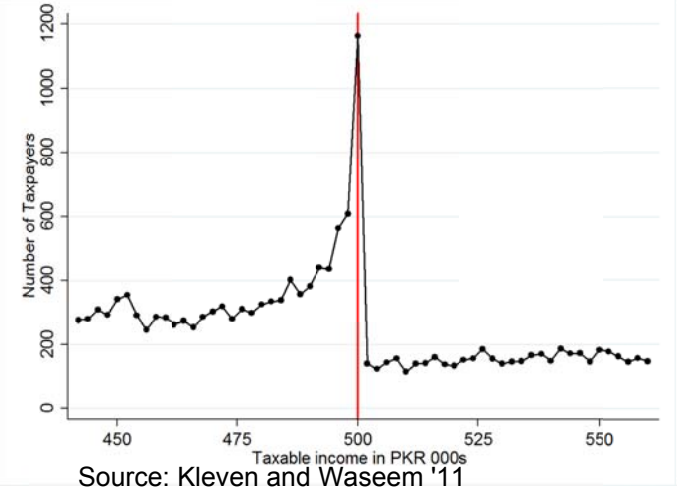
Panel A: Notch at 300k



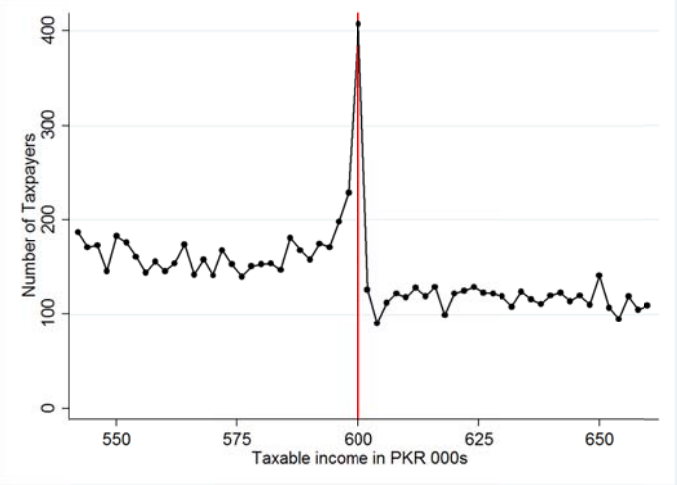
Panel B: Notch at 400k



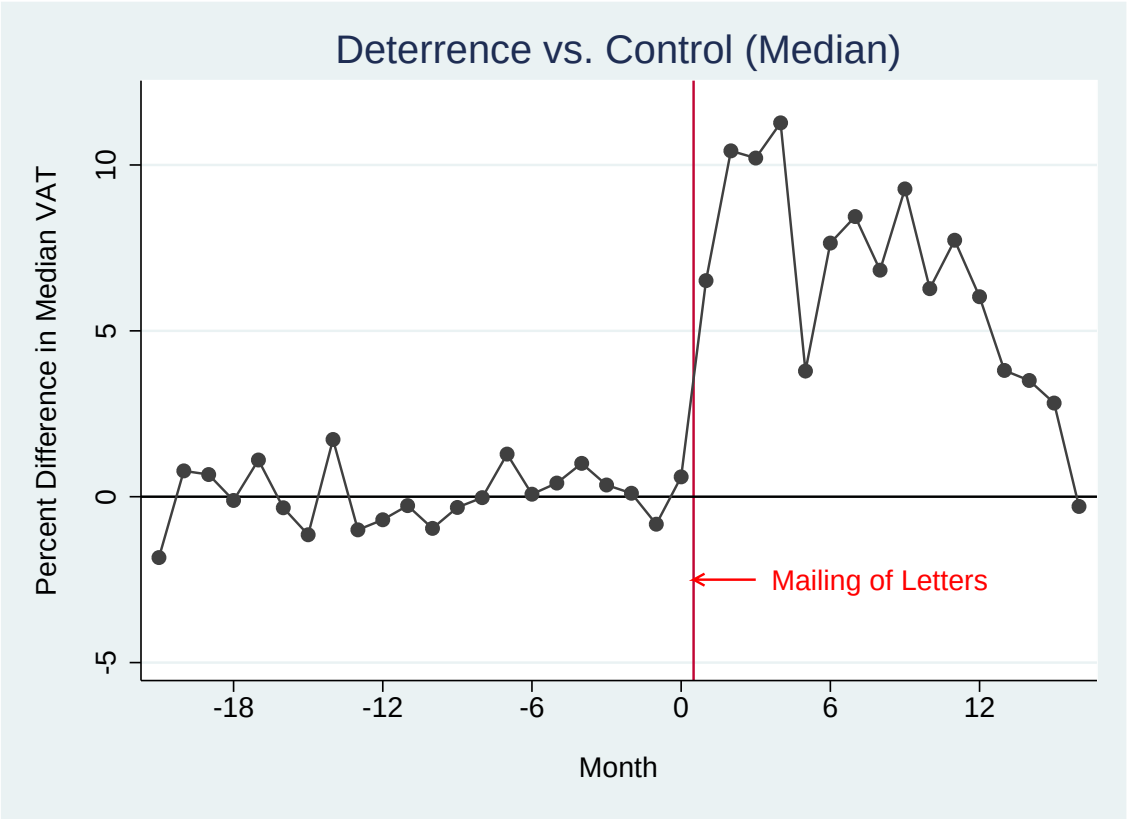
Panel C: Notch at 500k



Panel D: Notch at 600k



Source: Kleven and Waseem '11



Source: Pomeranz AER'14

Panel A

Table 4: Letter Message Experiment: Intent-to-Treat Effects on VAT Payments by Type of Letter

	(1) Mean VAT	(2) Median VAT	(3) Percent VAT > Previous Year	(4) Percent VAT > Predicted	(5) Percent VAT > Zero
Deterrence letter X post	-1,114	1,326***	1.40***	1.42***	0.53***
	(2,804)	(316)	(0.12)	(0.10)	(0.09)
Tax morale letter X post	-1,840	262	0.40	0.30	0.44**
	(6,082)	(666)	(0.25)	(0.22)	(0.20)
Placebo letter X post	835	383	-0.11	-0.19	-0.14
	(6,243)	(687)	(0.26)	(0.23)	(0.20)
Constant	268,810***	17,518***	47.50***	48.27***	67.30***
	(1,799)	(112)	(0.07)	(0.07)	(0.06)
Month fixed effects	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	No	Yes	Yes	Yes
Treatment Assignment	No	Yes	No	No	No
Number of observations	7,892,076	1,221,828	7,892,076	7,892,076	7,892,076
Number of firms	445,734	445,734	445,734	445,734	445,734
Adjusted R^2	0.40		0.14	0.28	0.47

Notes: Column (1) shows a regression of the mean declared VAT on treatment dummies, winsorized at the top and bottom 0.1% to deal with extreme outliers. Column (2) shows a median regression of average VAT before treatment and in 4 months after each treatment wave. Columns (3)-(5) show linear probability regressions of the probability of an increase in declared VAT compared to the same month in the previous year, the probability of declaring more than predicted and the probability of declaring any positive amount. Observations are monthly in Columns (1) and (3)-(5) for ten months prior to treatment and four months after each wave of mailing. The four months after the second wave excludes firms treated in the first. Coefficients and standard errors of the linear probability regressions are multiplied by 100 to express effects in percent. Monetary amounts are in Chilean pesos, with 500 Chilean pesos approximately equivalent to 1 USD. Standard errors in parentheses, robust and clustered at the firm level for Columns (1) and (3)-(5). *** p<0.01, ** p<0.05, * p<0.1.

Source: Pomeranz AER'15

Table 5: Impact of Deterrence Letter on Different Types of Transactions

	(1) Percent Sales > Previous Year	(2) Percent Input Costs > Previous Year	(3) Percent Intermediary Sales > Previous Year	(4) Percent Final Sales > Previous Year
Deterrence letter X post	1.17***	0.16	0.12	1.33***
	(0.22)	(0.21)	(0.19)	(0.21)
Constant	55.39***	53.25***	38.37***	45.04***
	(0.13)	(0.13)	(0.12)	(0.12)
Month fixed effects	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Number of observations	2,392,529	2,392,529	2,392,529	2,392,529
Number of firms	133,156	133,156	133,156	133,156
Adjusted R^2	0.25	0.22	0.30	0.32

Notes: Regressions of the probability of the line item (total sales, total input costs, intermediary sales, and final sales) being higher than in the same month the previous year. Sample of firms that have both final and intermediary sales in the year prior to treatment. The four months after the second wave excludes firms treated in the first wave. Coefficients and standard errors are multiplied by 100 to express effects in percent. Robust standard errors in parentheses, clustered at the firm level. *** p<0.01, ** p<0.05, * p<0.1.

Source: Pomeranz AER'15

Table 6: Interaction of Firm Size and Share of Sales to Final Consumers

Panel A:	Percent VAT > Previous Year				
	(1)	(2)	(3)	(4)	(5)
Deterrence letter X final sales share	1.61***			1.48***	1.43***
	(0.26)			(0.27)	(0.26)
Deterrence letter X size category		-0.17***		-0.10***	
		(0.04)		(0.04)	
Deterrence letter X log employees			-0.45***		-0.29**
			(0.11)		(0.12)
Deterrence letter	0.68***	2.63***	1.66***	1.49***	0.92***
	(0.16)	(0.29)	(0.13)	(0.35)	(0.19)
Constant	47.53***	48.87***	47.50***	48.89***	47.53***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Final sales share X post	Yes	No	No	Yes	Yes
Size measure X post	No	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
Month dummies	Yes	Yes	Yes	Yes	Yes
Observations	7,308,631	7,116,590	7,340,994	7,084,823	7,308,631
Number of firms	406,834	396,135	408,636	394,367	406,834
Adjusted R^2	0.14	0.14	0.14	0.14	0.14

Source: Pomeranz AER'15

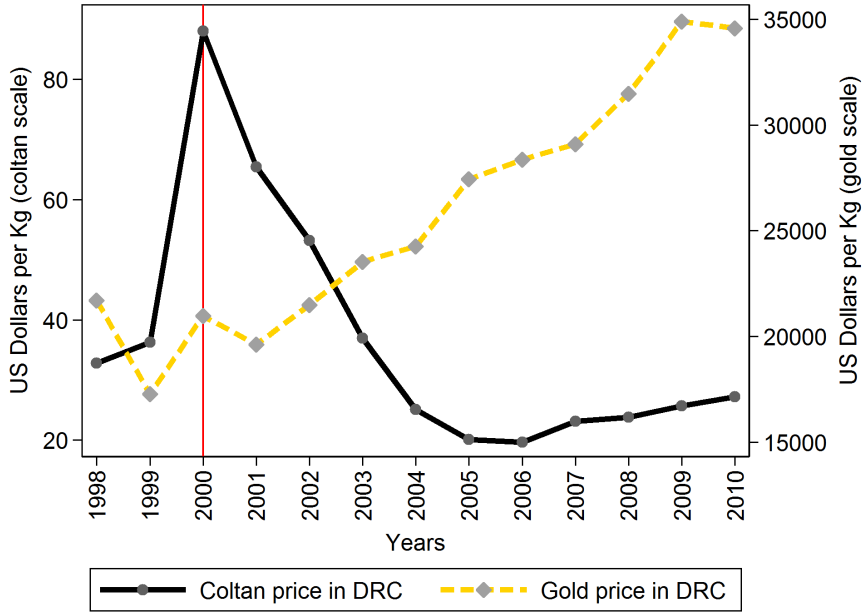
Table 7: Spillover Effects on Trading Partners' VAT Payments

	(1) Percent VAT > Previous Year	(2) Percent VAT > Predicted	(3) Percent VAT > Previous Year	(4) Percent VAT > Predicted	(5) Percent VAT > Previous Year	(6) Percent VAT > Predicted
Audit announcement X post	2.41**	2.03*				
	(1.14)	(1.11)				
Audit announcement X supplier X post			4.28***	3.92***	4.14***	3.83***
			(1.54)	(1.50)	(1.52)	(1.52)
Audit announcement X client X post			-0.26	-0.28	-0.14	-0.28
			(1.64)	(1.51)	(1.67)	(1.55)
Supplier X post			-0.64	0.34	-1.11	0.60
			(1.62)	(1.59)	(1.67)	(1.64)
Constant	52.07***	49.06***	52.07***	49.06***	52.75***	50.11***
	(0.95)	(0.94)	(0.95)	(0.94)	(0.96)	(0.96)
Controls X post	No	No	No	No	Yes	Yes
Controls X audit announcement X post	No	No	No	No	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	45,264	45,264	45,264	45,264	44,288	44,288
Number of firms	2,829	2,829	2,829	2,829	2,768	2,768
Adjusted R^2	0.05	0.11	0.05	0.11	0.05	0.10

Notes: Regressions for trading partners of audited firms. Column (1), (3) and (5) shows the probability of an increase in declared VAT since the previous year, Column (2), (4) and (6) shows the probability of declaring more than predicted. The controls in Columns (5) and (6) are firm sales, sales/input-ratio, share of sales going to final consumers, and industry categorized as "hard-to-monitor." Observations are monthly for ten months prior to treatment and six months after the audit announcements were mailed. Coefficients and standard errors are multiplied by 100 to express effects in percent. Robust standard errors in parentheses, clustered at the level of the audited firm. *** p<0.01, ** p<0.05, * p<0.1.

Source: Pomeranz AER'15

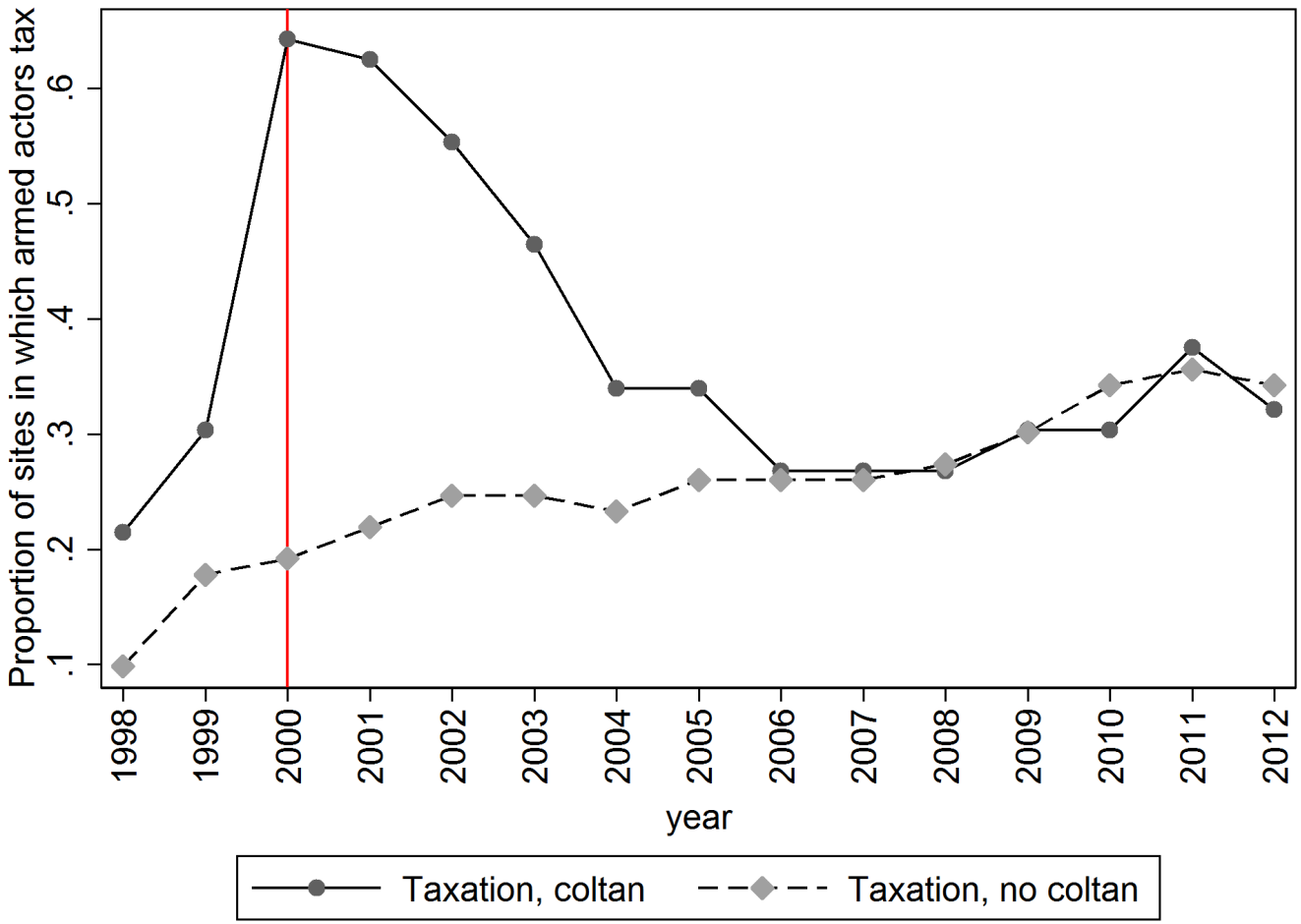
Figure 2: Local prices of coltan and gold



Notes: This figure plots the yearly average price of gold and coltan in Sud Kivu, in USD per kilogram, as measured in the survey. The price of coltan is scaled on the left vertical axis and the price of gold in the right axis. Source: United States Geological Survey (2010).

Source: Sanchez (2015)

Figure 9: Demand shock for coltan and presence of taxation



Notes: This figure plots the average number of sites where an armed actor collects taxes regularly on years. I take this variable from the site survey, in which the specialists are asked to list past taxes in the site. Taxes by an armed actor are defined in the survey as a mandatory payment on mining activity which is regular (sporadic expropriation is excluded), stable (rates of expropriation are stable) and anticipated (villagers make investment decisions with knowledge of these expropriation rates and that these will be respected). The solid line graphs the average number of mining sites where an armed actor collects regular taxes for mining sites that are endowed with available coltan deposits, and the dashed line reports the same quantity for mining sites that are not endowed with coltan deposits.

Source: Sanchez (2015)