Charitable Giving and Tax Policy in the Presence of Tax Cheating

Theory and Evidence from the US and France

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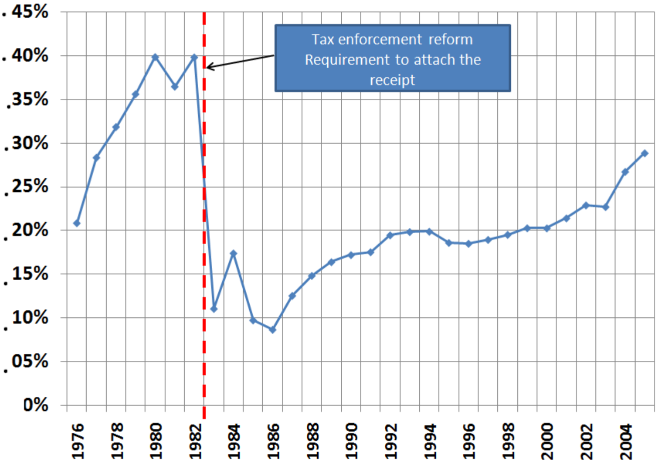
Motivation:

- **Public Finance literature:**
  - New interest in tax enforcement and tax administration issues (Slemrod & Stephan (2007), Chetty & Saez (2009), Kleven & al. (2009),etc.)
  - Tax cheating: very complicated to analyze empirically (Feinstein (1991), Gorodnichenko & al. (2009), Merriman (2010), etc.)
- **Private charitable contributions finance many socially valuable activities** (education, arts,...) in the US.
  - Heated debate on optimal tax policy for contributions. Obama administration: cap charitable deduction for top income households
  - Fact that charitable deduction can be important channel for tax avoidance= neglected issue (Yerdmack (2008), Ackerman & Auten (2008), etc.)

This talk

- **Main contributions:**
  - Demonstrate theoretically and empirically that cheating is a first-order issue for optimal tax policy for charitable contributions
  - Propose new method to empirically estimate cheating using **natural experiments on tax enforcement**
- **Method and Results:**
  - Derive 3 **sufficient statistics** to be estimated to assess the optimality of tax subsidies in the presence of tax cheating
  - Estimate these 3 sufficient statistics using 2 natural experiments on tax enforcement. We find:
    - Substantial tax cheating through charitable contributions
    - Cheating very responsive to tax incentives

Figure 1: Total reported charitable contributions as a percentage of total reported income, France, 1976-2005



Source: Exhaustive compilation of tax returns, Etats 1921, DGI. Reported contributions are always contributions reported by taxpayers in their tax returns after 1983, and not contributions with matched receipts.

Outline

- Introduction
- Model: optimal subsidy with tax cheating
  - A simple case: unit elasticity rule
  - A general model of optimal subsidy with tax cheating
  - 3 sufficient statistics
- Estimation of 3 sufficient statistics
  - France 1983: requirement to attach the receipts
    - Set-up and graphical evidence
    - Estimation of the 3 sufficient statistics
  - US 1969: tightening of the rules regulating private foundations
- Conclusion

Simple public finance objective without cheating

- No cheating
- Government's objective: Max W $= g - \tau g$

$$\frac{dW}{d\tau} = -g(1 + \varepsilon_g)$$

where $\varepsilon_g = \frac{dg}{d(1-\tau)} \frac{1-\tau}{g}$

- ε_g **is sufficient** to infer tax policy
- **Unit elasticity rule** popularized by Feldstein:

Subsidy should be increased if

$$|\varepsilon_g| \geq 1$$

Simple public finance objective with cheating

- Reported contributions $g_T = g + g_c$
  - g "True contributions" producing externality
  - g_c "Cheated contributions" not producing externality.

- Government's objective: Max $W = g - \tau g - \tau g_c$

Optimal rule

$$\frac{dW}{d\tau} \geq 0 \quad \Leftrightarrow \quad |\varepsilon_{g_T}| \geq 1 + \frac{1-\alpha}{1-\tau}|\varepsilon_{g_c}|$$

  - $\alpha = \frac{g}{g_T}$: share of "true" contributions.
  - ε_{g_T}: elasticity of total reported contributions w.r.t. $1-\tau$
  - ε_{g_c}: elasticity of cheated contributions w.r.t. $1-\tau$

- ε_{g_T} **is not sufficient** to infer tax policy

- Need to estimate ε_{g_c} and α

Optimal subsidy with tax cheating

- Model of optimal subsidy with externality of a public good G, warm-glow of giving, and individuals can use cheated contributions to finance private consumption.
- **For any given tax enforcement regime**,

At the optimum

$$\varepsilon_{g^T} = -(1 - \beta(\bar{G^T})) + \frac{1-\alpha}{1-\tau}\varepsilon_{g^c}$$

- ε_{g^T}: elasticity of reported contributions
- $\beta(\bar{G^T})$: average individual weights in the social welfare function weighted by contributions
- 1-α: the larger the share of "cheated" contributions, the greater the cost of the subsidy on the stock of reported contributions.
- ε_{g^c}: the larger the elasticity of "cheated" contributions, the greater the distortion generated by $\Delta\tau$ towards private consumption instead of financing the public good.

Welfare sufficient statistics & empirical agenda

- The **sufficient statistics approach** (Feldstein (1995), Chetty(2009)):
  - Assumption: in a small neighborhood of the actual tax parameters, ε_{g^T}, ε_{g^c} and α can be considered as constant.
  - Welfare implications can be derived without recovering the full set of structural parameters.
    - Very limited functional form assumptions
    - Limited number of parameters to be estimated, useful when identification sources are scarce
- **Empirical Agenda**: we estimate 3 welfare sufficient statistics:
  - **1 reported contribution parameter**: ε_{g^T}.
  - **2 "cheating parameters"**
    - $(1-\alpha)$: share of cheated contributions
    - ε_{g^c}: price elasticity of cheated contributions.

Outline

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Model: optimal subsidy with tax cheating

Estimation of 3 sufficient statistics
- France 1983: requirement to attach the receipts
  - Set-up and graphical evidence
  - Estimation of the 3 sufficient statistics
- US 1969: tightening of the rules regulating private foundations

Conclusion

Limitations of tax cheating studies:

Empirical tax cheating literature has focused on:

- Audited returns (Clotfelter (1983), Slemrod (1989)).
  Issues:
  - Small samples: miss a large fraction of giving and sheltering behaviors which are very concentrated.
  - Selection: taxpayers in audited returns samples have *ex ante* a higher probability of being audited.
  - Only illegal evasion, not avoidance
- External surveys (Gorodnichenko & al. (2009)).
  Issues:
  - Lack consistency and reliability between sources.
- Anecdotal evidence (Merriman (2010)).
  Issues:
  - Difficult to disentangle confounding factors.

Two natural experiments

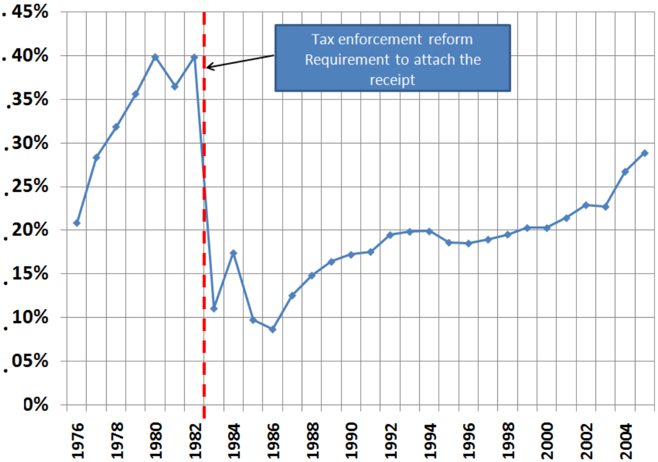
Our strategy: natural experiments on tax enforcement.

- Principle: sudden and exogenous variation in the cost of cheating.
  - **France 1983:**
    - Before 1983, taxpayers were simply required to keep receipts of their contributions to non-profit.
    - In 1983, the French tax administration required taxpayers to submit receipts with their tax returns to claim charitable deductions.
  - **USA 1969:**
    - In 1969, Congress passed a law preventing "self dealing" and other possibility of abuses for contributions to private foundations.
    - Change in incentives to cheat for rich taxpayers having private foundations but not for taxpayers at lower level of income.

France 1983: setting

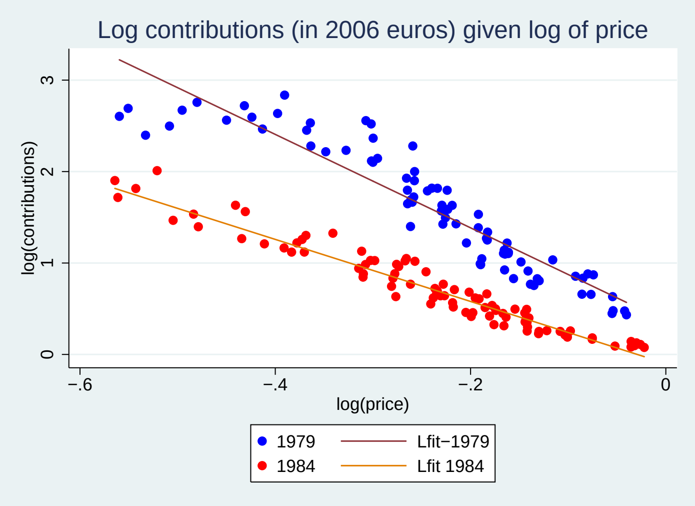
- Very mild tax enforcement reform:
  - Before 1983, French taxpayers were already asked to keep a receipt of the contributions in case of an audit
  - Technology for producing the receipts was well in place since the 1970s at least
  - Cost of attaching the receipt is very low
- Exogenous increase in the probability of detection or equivalently exogenous increase in the cost of cheating:
  - Increase is large because audit rates before the reform were low
  - Should lead to decline in reported contributions
- Heterogeneity in MTR:
  - Individuals with higher MTR (higher incentive to cheat) before the reform should experience larger decline in reported contributions
  - Should lead to drop in price elasticity of reported contributions ε_{G^T}

Figure 2: Total reported charitable contributions as a percentage of total reported income, France, 1976-2005



Source: Exhaustive compilation of tax returns, Etats 1921, DGI. Reported contributions are always contributions reported by taxpayers in their tax returns after 1983, and not amounts with receipts effectively sent.

Figure 3: A regime change in price elasticity



Source: ERF 1979-1984

Note: Each blue scatter stands for a percentile of the income distribution in 1979. Each red scatter stands for a percentile of the income distribution in 1984. The graph gives a cross-sectional unconditional picture of the regime change in price elasticity.

Data

- 2 samples of 60,000 taxpayers in 1979 and 1984 drawn by the French tax administration
- Oversampling of rich taxpayers
- All info available on individuals' tax returns: all sources of income, all deductions, transfers received, marital status, number of children, income tax paid, etc
- Info on reported contributions as well as proven receipts in 1984

Estimating (1-α)

- Simple difference identification
- Assumption:
  Absent the reform and conditional on observables, contributions should not have changed before and after the reform
- Specification:

$$log(contributions) = \gamma log(1-\tau) + \theta log(income) + X'\beta - (1-\alpha)(\text{Year}=1984) + u$$

Table 1: Estimates of (1-α)

	(1) OLS	(2) logit *Pr(Contrib> 0)* *(AME)*	(3) OLS *Taxable households*
year84	-0.742***	-0.860***	-0.896***
	(0.0131)	(0.0241)	(0.0164)
logincome	0.0469***	0.125	0.421***
	(0.0130)	(0.0864)	(0.0513)
logprice	-1.054***	-0.459*	-0.678***
	(0.105)	(0.188)	(0.140)
20 income group FE	YES	YES	YES
# of child. & marital stat. FE	YES	YES	YES
N	83676	83676	65821
R^2	0.137		0.111

Standard errors clustered at the income group level in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Caveats

Other behavioral stories could explain drop in contributions:

- Underreporting
  - Reporting contributions may be more costly after the reform (transaction costs)
  - Psychological cost of higher enforcement
- People lose their receipts

External survey evidence (enquête Cerphi-Gregor) demonstrates that 81% of taxable households report their gifts. Underreporting bias cannot explain the whole drop in contributions

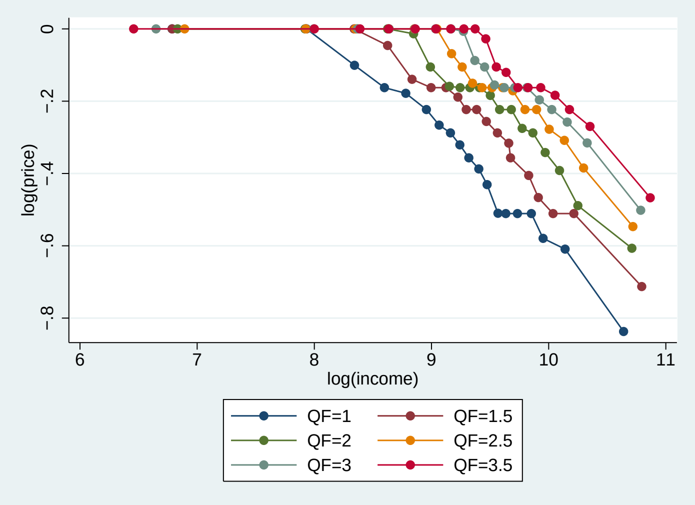
In any case, we have an **upper bound on** $(1 - \alpha)$

Estimating ε_{g_c}

- Begin with estimating the regime drop in price elasticity of reported contributions
- Identification issue: simultaneity of price and income variation in the cross-section
- We use non-linearities created by a system of **family income splitting in France**, called *Quotient Familial* (QF).
  - MTR is a complicated non-linear function of income and marital status, age, rank and number of children

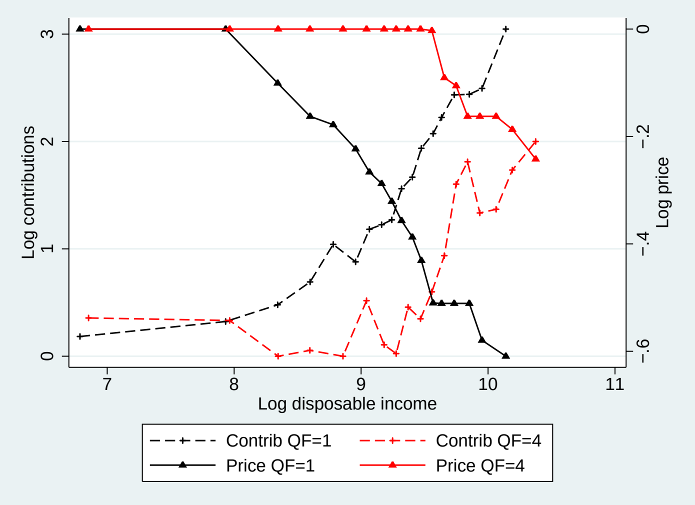
Quotient Familial

Figure 4: Log(price) of contributions given income for different groups of QF (1979)



Note: Each line stands for a different QF group. Identification relies on the non-linearities in price variations across QF groups/income groups

Figure 5: Log of price and log of contributions given income for two QF groups (1979)



Identification (2)

- **Instruments**:
  We instrument $(1-\tau)$ by a **set of dummies for all *n* QF groups interacted with a set of 20 income group dummies**.

- **Identifying assumption**:
  For each QF group, the elasticity of contributions w.r.t. income is the same across groups of income.

- **Controls:**
  - 20 income group dummies to control non parametrically for income
  - Set of marital status and number of children dummies
  - Set of marital and children dummies interacted with log(income)

Table 2: Estimates of price elasticity change 1979-1984

	(1) OLS	(2) 2SLS	(3) 2SLS	(4) 2SLS
logprice79	-1.625***	-1.807***	-1.919***	-1.408***
	(0.190)	(0.218)	(0.216)	(0.275)
logprice84	-0.860***	-0.814***	-0.896***	-0.880***
	(0.146)	(0.189)	(0.175)	(0.200)
Income groups FE	YES	YES	YES	YES
Marital stat. & child. FE	YES	YES	YES	YES
Marit. & child. FE interacted with log(income)	NO	NO	NO	YES
N	80672	80672	80672	83676
R^2	0.128	0.128	0.127	0.135

(4) 10 income groups instead of 20
Robust s.e. in parentheses clustered at the QF group*income group level
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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Robustness

- A lot of taxpayers do not contribute:
  - Excess-zero model
  - OLS estimates may be biased
- IV-Censored Quantile regression estimates (Chernozhukov & al. (2009))
  - Conditional quantile not affected by the censoring if superior to 0
  - No assumption on the distribution of the error-term
  - Allows for distributional analysis of cheating behaviors

▸ IV-CQREG

Table 3: IV-CQREG estimates of price elasticity change in France (1979 vs 1984). Dependent variable: log of reported contributions

	q=.85	q=.9	q=.95	q=.99
logprice79	-1.319***	-1.215***	-1.608***	-2.278***
	(0.0154)	(0.0321)	(0.0320)	(0.265)
logprice84	-0.178	-0.391	-0.509	-1.417*
	(0.219)	(0.552)	(0.398)	(0.682)
Income groups FE	YES	YES	YES	YES
Marital stat. & child. FE	YES	YES	YES	YES
Marit. & child. FE interacted with log(income)	NO	NO	NO	NO
N	80672	80672	80672	80672

Bootstrapped s.e. in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Two-part Model

Table 4: Heterogeneity: IV-CQREG estimates of price elasticity change in France (1979 vs 1984). Dependent variable: log of reported contributions

	q=.85	q=.9	q=.95	q=.99
	Lower income households (P0-50)			
logprice79	-	-2.777***	-2.128***	-3.199**
	-	(0.0111)	(0.0565)	(1.079)
logprice84	-	-	8.19e-10	-0.446
	-	-	(0.187e-9)	(1.810)
	Higher income households (P50-100)			
logprice79	-0.569***	-0.703***	-0.728***	-0.456
	(0.0796)	(0.111)	(0.155)	(0.453)
logprice84	0.385	0.387	-1.020**	-1.059
	(0.986)	(0.596)	(0.410)	(0.607)

Bootstrapped s.e. in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Pinning down ε_{g_c}

Identification assumption: After 1984, cheated contributions are negligible.
(New cheating technologies not yet developed + room for new abuses was small: few gifts of assets, no private foundations,etc.)

- **For 1979**:

$$g_T = g + g_c$$

$$\Rightarrow \frac{dg_T}{g_T} = (\alpha\varepsilon_g + (1-\alpha)\varepsilon_{g_c})\frac{d(1-\tau)}{1-\tau}$$

Our estimate of the price elasticity is a weighted average of two elasticities:

$$log(contributions) = (\alpha\varepsilon_g + (1-\alpha)\varepsilon_{g_c})log(1-\tau) + X'\beta_1 + u \tag{1}$$

- **For 1984**:

$$g_T \simeq g$$

$$\Rightarrow \frac{dg_T}{g_T} = \varepsilon_g \frac{d(1-\tau)}{1-\tau}$$

We estimate the elasticity of true contributions:

$$log(contributions) = \varepsilon_g log(1-\tau) + X'\beta_2 + u \tag{2}$$

Pinning down ε_{g_c}

- Baseline estimates:
  - $\hat{\alpha} = .25$
  - $\hat{\varepsilon}_{g_{1979}} = -1.5$
  - $\hat{\varepsilon}_{g_{1984}} = -.85$
- Simple plug-in

$$\hat{\varepsilon}_{g_c} = \frac{\hat{\varepsilon}_{g_{1979}} - \hat{\alpha}\hat{\varepsilon}_{g_{1984}}}{1 - \hat{\alpha}}$$

$$\hat{\varepsilon}_{g_c} \simeq -1.7$$

- In case the identification assumption is too strong, bounds on ε_{g_c} instead of point identification
- Implication: modified public finance criterion does not hold whereas the Unit Elasticity Rule was satisfied

$$|\hat{\varepsilon}_{g_T}| < 1 + \frac{1 - \hat{\alpha}}{1 - \tau} |\hat{\varepsilon}_{g_c}|$$

Other concerns

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- A simple case: unit elasticity rule
- A general model of optimal subsidy with tax cheating
- 3 sufficient statistics

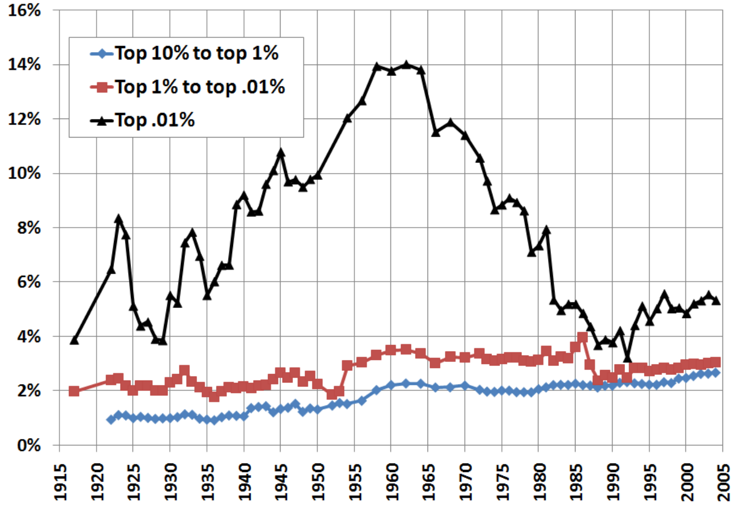
Estimation of 3 sufficient statistics
- France 1983: requirement to attach the receipts
  - Set-up and graphical evidence
  - Estimation of the 3 sufficient statistics
- US 1969: tightening of the rules regulating private foundations

Conclusion

New dataset on long term contributions and MTR

- **Data on contributions**:
  1. **For years 1917 to 1960: Statistics of Income (SOI)** from the IRS. We interpolate charitable contributions from tabulations of exhaustive reported contributions by income bracket.
  2. **For years 1960 to 2005**: yearly samples of **micro data** with oversampling of rich taxpayers from the IRS.
- **Data on effective marginal tax rates**:
  1. **For years 1917 to 1960:** We **created a federal income tax simulator** to compute effective marginal tax rates on earned income and on capital gains for top income groups taking into account all reported income and deductions interpolated from yearly SOI tabulations.
  2. **For years 1960 to 2005:** We computed effective marginal tax rates from IRS microdata using NBER's tax simulator **Taxsim9**.

Figure 6: Charitable contributions as a % of total income for top income groups United States 1917-2005



Note: Income groups are computed excluding capital gains. Charitable contributions are computed as a percentage of income re-including capital gains.

USA 1969: natural experiment setting

- Private foundations experienced **very loose control before 1969**.
  - Many foundations were created and a large number of abuses reported.
- In **1969, tax enforcement reform** on contributions to private foundations.
  - Change in incentives to cheat for top .01% of taxpayers (having private foundations) relative to top 10 to 5% (not having private foundations)
- **DD estimate**:
  - Gives us a **lower bound on** $(1-\alpha)$for very rich taxpayers.
- Unfortunately, no heterogeneity in treatment among the treated:
  - No opportunity to estimate ε_{g_c}.

Evidence of financial abuses of private foundations

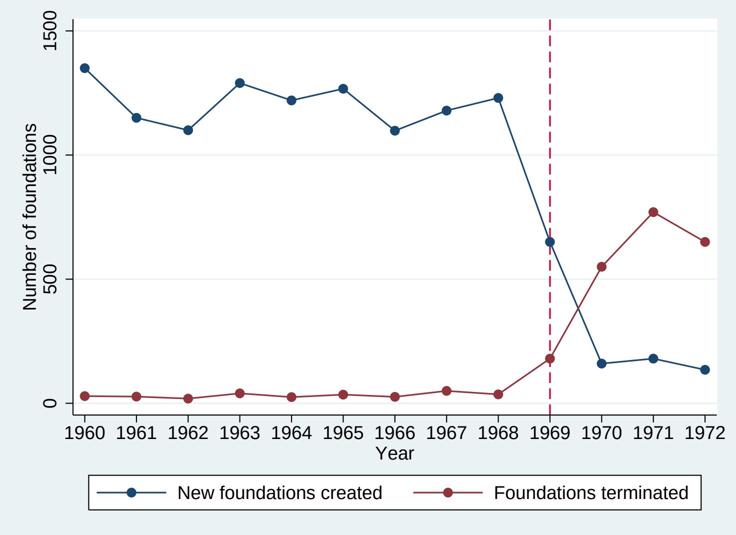
- Cox Committee Report (1952), Reece Report (1954), Treasury Department report (1965), Peterson Report (1969):
    - **Self dealing**: Anonymous survey on accountants of foundations (Peterson Report): 9% of accountants acknowledge common financial self dealing practices, 8% acknowledge that grants are made on friendship.
    - **Value of property** contributed frequently **overvalued**.
    - **False claimed deductions**.
    - **Foundations set up to maintain ownership of a business** while benefiting from tax exemption of income generated.
    - **Political briberies:** Wolfson foundation made a long term agreement for sizable annual payments to Justice Fortas of the Supreme Court.
    - **Very low pay out rates**

The 1969 tax reform and private foundations

- **Prohibition of "self dealing"**, defined as activities that benefit foundation managers, officers, substantial contributors and other foundation insiders.
- **Stricter tax rules on unrelated business income (UBI)**. In particular, business income that was not closely related to charitable activities of the organization became subject to tax.
- Establishment of a **minimum payout rate** as a percentage of investment assets.
- Increase in **audit rates** by the IRS.

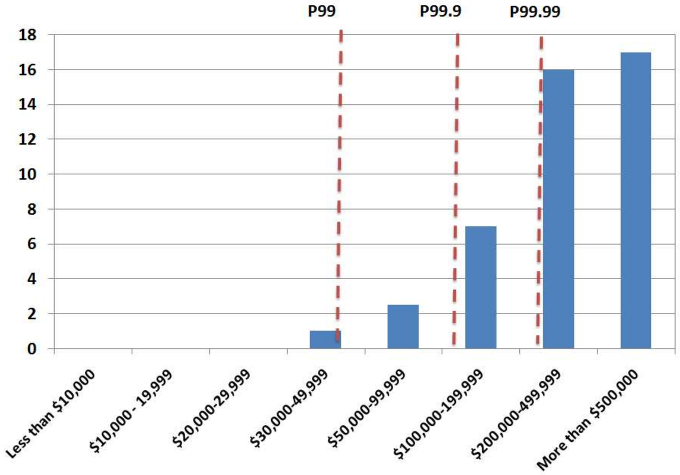
A pure tax enforcement reform. It **does not affect the price of true contributions**

Figure 7: Number of new foundations created and foundations terminated



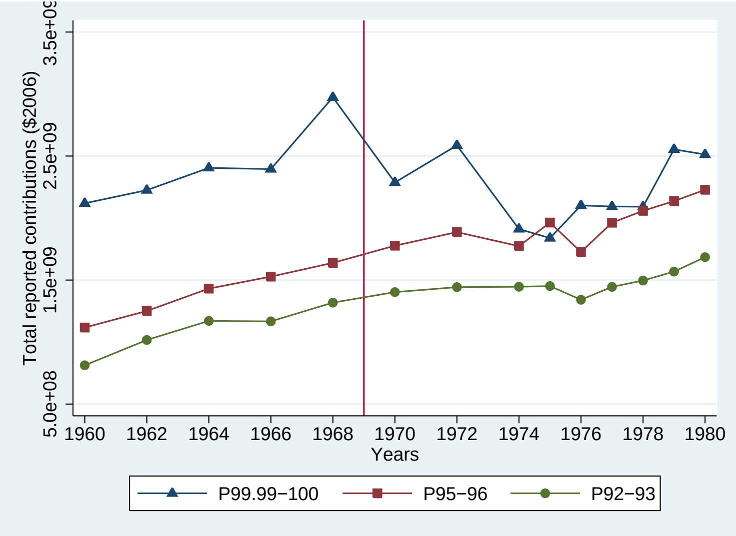
Source: Caplin and Drysdale and the Foundation Center. Reproduced from Research Papers sponsored by the the commission on private philanthropy and public needs, volume III, p. 1638, figure B-13.

Figure 8: % of households with charitable trust or charitable foundation by income level (1973)



Source: IRS & Institute for Social Research (Univ. of Michigan). Research Papers, Commission on private philanthropy and public needs, vol. I, p.188, figure 6. *Note*: P99 = 99th percentile of income excluding capital gains.

Figure 9: Total contributions by income group, United States (1960 to 1980)



Note: P99.99-100 = households with income above the 99.99th percentile of income excluding capital gains. P95-96= households with income above the 95th percentile but below the 96th percentile of income excluding capital gains. P92-93= households with income above the 92nd percentile but below the 93rd percentile of income

Estimation of the impact of TRA69 on contributions

Standard DD specification :

$$\begin{aligned} log(contribution)_{i,t} = & \sum_i \delta_i + \sum_t \theta_t + \alpha(\text{Treated group} * \text{after 69}) \\ & + \epsilon log(price) + \beta log(income) + \varepsilon_{i,t} \end{aligned} \tag{3}$$

- Baseline specification compares group P99.99-100 vs P90-95.
- Baseline specification compares year 1964-1969 to years 1970-1975. (We also consider a larger time window 1960 to 1980 with no loss of robustness.)
- δ_i are a set of indicators for the different income groups. θ_t are year fixed effects.
- We control for possible small variations of price or income among groups.

Evolution of MTR

Table 5: Diff-in-Diff estimates of the effect of TRA69 on charitable contributions of top income households. Dependent variable: log of contributions

	(1) P99.99-100 vs. P90-95	(2) P99.99-100 vs. P90-95	(3) P99.99-100 vs. P80-95	(4) P99.99-100 vs. P90-95	(5) P90-95 vs. P70-90 (*placebo*)	(6) P99.99-100 vs. P90-95 (*placebo*)
Treated*after69	-0.388***	-0.282***	-0.259**	-0.308***		
	(0.0128)	(0.0226)	(0.0474)	(0.0111)		
Group placebo					0.0730	
					(0.0494)	
Time placebo						-0.0122
						(0.0312)
Controls for income & price	NO	YES	YES	YES	YES	YES
Controls for preexisting trend	NO	NO	NO	YES	NO	NO
N	84	84	98	54	126	30
Number of clusters	6	6	7	6	7	6

Cluster-robust standard errors in parentheses (clustering at the income group level)
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Group Placebo: Treated group is supposed to be P90-95 and control is P70-90.
Time Placebo: Reform is assumed to be happening in 1964 (1960 to 1964 vs. 1965 to 1968).

	(1) P99.99-100 vs. P90-95	(2) P99.99-100 vs. P90-95	(3) P99.99-100 vs. P80-95	(4) P99.99-100 vs. P90-95
Treated*after69	-0.388*** (0.0128)	-0.282*** (0.0226)	-0.259** (0.0474)	-0.308*** (0.0111)
Group placebo				
Time placebo				
Controls for income & price	NO	YES	YES	YES
Controls for preexisting trend	NO	NO	NO	YES
N	84	84	98	54

3)	(4)	(5)	(6)
9-100	P99.99-100	P90-95	P99.99-100
s.	vs.	vs.	vs.
-95	P90-95	P70-90	P90-95
		(*placebo*)	(*placebo*)
59**	-0.308***		
474)	(0.0111)		
		0.0730	
		(0.0494)	
			-0.0122
			(0.0312)
ES	YES	YES	YES
O	YES	NO	NO
8	54	126	30

Takeaways

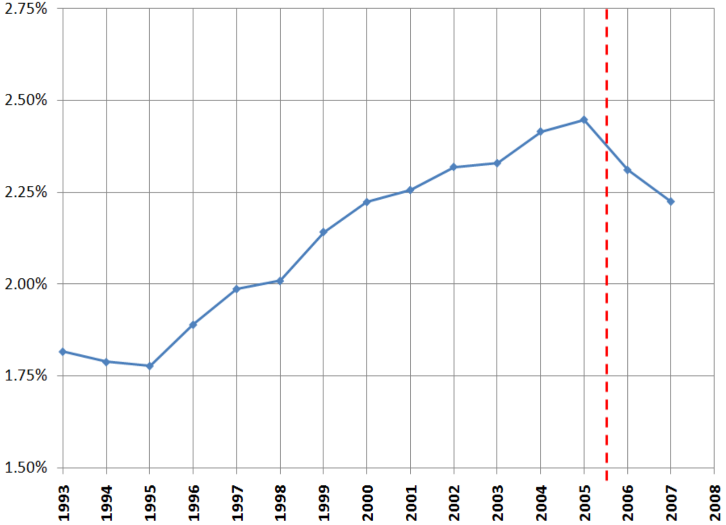
Our estimates tend to prove that avoidance behaviors are first-order issues to assess optimal tax policy:

- US 1969
  - $\alpha \leq .7$ for top .01% of taxpayers.
- France 1983:
  - $\alpha \simeq .25$ for all taxpayers
  - $\varepsilon_{g_c} \simeq -1.7$

Policy recommendations

- Government can act on two dimensions:
  - Tax enforcement
  - Subsidy rate
- Despite 2006 reform, tax enforcement regime on contributions in the US is still very loose:
  - Cash contributions:
    - Less than \$250: no obligation
    - $\geq$ \$250: must keep a receipt
  - Non cash contributions:
    - Less than \$500: must keep a receipt
    - $\geq$ \$500: must fill Form 8283
- Third-party reporting technology is already in place and might prove more efficient than capping the subsidy rate (Kleven & al. 2009).

Figure 10: Total reported contributions as % of total income including K gains, US (1993-2007)



Source: IRS Statistics Of Income, Table 2.1-Tax Years 1993-2007

Robustness

Table 6: Additional estimates of price elasticity change in France (1979 to 1984). Dependent variable: log of reported contributions

	(1) Two-part Model	(2)	(3) Censored Quantile Reg.			
	IV Probit	2SLS	q=.85	q=.9	q=.95	q=.99
logprice79	-0.349	-0.963***	-1.164***	-1.303***	-1.608***	-2.278***
	(0.218)	(0.259)	(0.0165)	(0.0293)	(0.0308)	(0.256)
logprice84	-0.358	-0.779***	-0.244	-0.832*	-0.484	-1.145
	(0.247)	(0.276)	(0.224)	(0.418)	(0.399)	(0.603)
Income groups FE	YES	YES	YES	YES	YES	YES
Marital stat. & child. FE	YES	YES	YES	YES	YES	YES
Marit. & child. FE interacted with log(income)	NO	NO	NO	NO	NO	NO
N	80672	17751	80672	80672	80672	80672

Column (2) 2SLS conditional on being a donor
Robust s.e. in parentheses clustered at the QF group*income group level
Bootstrapped s.e. in parentheses for the 3-step censored quantile regression model
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Identification (1)

- **Principle:**
  - Y = taxable income
  - n = QF units (function of marital status and number of children.)
  - T = tax schedule with $T' \geq 0$ and $T'' \geq 0$
  - $\text{Tax} = nT(\frac{Y}{n})$
  - $\tau = \frac{d\text{Tax}}{dY} = T'(Y/n)$
- At any given level of income, τ **varies with** n **the number of QF units**
- At any given level of income, **an increment in income will lead to different variations in** τ **for different levels of** n

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Estimates of ε_{g_c}: possible sources of concerns

- **Underreporting in 1984** $g_T = g - g_o$:
  Two possibilities
  1. g_o does not depend directly on MTR
  2. g_o depends negatively on MTR $\Rightarrow \hat{\varepsilon}_{g_{1984}}$ is a higher bound on ε_g, so we tend to underestimate the absolute value of ε_{g_c}
- **Cheating behaviors are correlated with unobservable variables correlated with MTR in the cross-section**:
  1. Instrumenting variations of MTR with legislated changes over the 1970-1990 period alleviates this issue.

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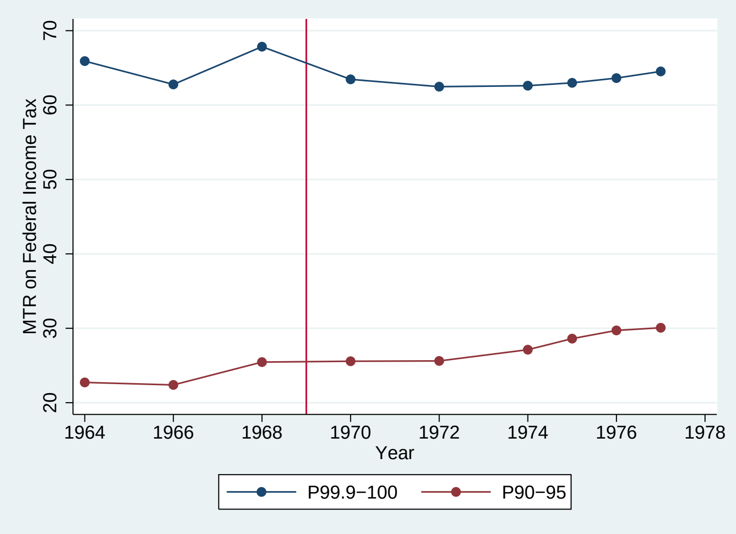
The US tax system and charitable giving

- Tax incentives for charitable giving have existed in the US federal income tax system since 1917. In 2007, US taxpayers reported on their income tax returns a total of 193.6 $Bn, which represents more than 80% of total individual giving to the non-profit sector (*Giving USA*).
- Private contributions are **deducted from taxable income**.
- The *price* of a contribution is therefore 1-τ where τ is the marginal tax rate of the taxpayer.

Figure 11: Average MTR on federal income tax by income group



Note: P99.9-100 = households with income above the 99.9th percentile of income excluding capital gains. P90-95= households above the 90th percentile but below the 95th percentile.

Instrumental Variable Censored Quantile Regression Model

The Model

$$
\begin{aligned}
Y &= Max(Y^*, C) && (4) \\
Y^* &= Q^*_Y(U|X_1, X_2, V) && (5) \\
X_1 &= Q_{X_1}(V|X_2, Z) && (6)
\end{aligned}
$$

- Censoring (Y^* observed if $Y^* > C$)
- Endogenous regressor X_1
- V: latent unobserved regressor (*the control function*)
- Vector of instruments Z available
- Linearity Assumption: $Q^*_Y(U|X_1, X_2, V) = X'\beta$

IVCQREG: Implementation

1. Estimate $Q_{X_1}(V|X_2, Z)$
   - For instance empirical CDF of OLS residuals of the regression of X_1 on X_2 and Z
2. Select a subset of observations unlikely to be censored
   - Use parametric probability model that $Y_i > C$ with set of regressors X_1, X_2 and $\hat{V}$
3. Estimate a standard quantile regression model on the selected observations (with set of regressors X_1, X_2 and $\hat{V}$)

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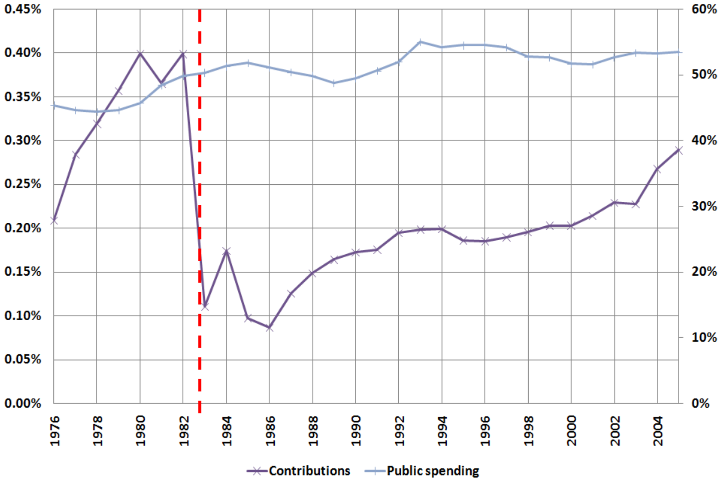
Figure 12: Total reported charitable contributions as a percentage of total income & public spending as a percentage of GDP, France, 1976-2005



Source: Exhaustive compilation of tax returns, Etats 1921, DGI and INSEE, National Accounting