Tax Design, Information, and Elasticities: Evidence From the French Wealth Tax

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How to design efficient taxes?

- Elasticities are key to inform optimal tax policy
 - Classical trade-off between equity and efficiency
 - Large literature on elasticity of taxable income, nascent on elasticity of taxable wealth
- But elasticities are not structural parameters
 - Key difficulty: behavioral responses to tax rates depend on the design of the tax
 - Size of tax base, degree of enforcement, stringency of reporting requirements, ...
 - These features of tax design vary over time and across countries
- Need to isolate the causal effect of tax design on behaviors
 - 1. Hard to find compelling sources of changes in tax design
 - 2. Regarding wealth tax: only few countries collect individual-level administrative data on wealth

This Paper: A French Reform in Reporting Requirements

Detailed

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IMPÔT DE SOLIDARITÉ SUR LA FORTUNI

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Bunching in reporting requirement >> Bunching in tax rate only



Preview of Results:

Methodologically Develop an original dynamic bunching approach

- Relax assumptions about counterfactual distributions
- Quantify responses by different wealth group
- Allows to directly estimate LATE and identify compliers

Findings

- 1. Reporting requirement are crucial in driving behavioral responses
 - Decrease in annual wealth growth rate of wealth by 20% (0.5pp)
 - Driven by 15% of compliers who respond massively (-3.5pp)
- 2. Responses are persistent and grow over time
 - Bunching responses last for at least 4 years
 - Responses spread further down the wealth distribution
- 3. Simplified reporting associated with easier evasion responses
 - No change in real labor and capital income
 - No evidence of reduced hassle costs/privacy concerns
 - Results consistent with a model of taxpayer's behavior with dynamic misreporting

Related literature and contribution

Tax base elasticities and tax design

Theoretical work: Slemrod and Kopczuk (2002), Keen and Slemrod (2017); Empirical: Kopczuk (2005), Kleven et al. (2011), Fack & Landais (2016), , Aghion et al. (2017), Almunia and Lopez-Rodriguez (2018), Blesse et al. (2019), Harju et al. (2019), Benzarti (2020), Basri et al. (2021)

Contribution \Rightarrow Discontinuity (decrease) in reporting requirements

Behavioral responses to wealth taxes

Seim (2017), Zoutman (2018), Duran-Cabré et al. (2019), Agrawal et al. (2020), Jakobsen et al. (2020), Londono-Vélez & Avila-Mahecha (2021, 2022), Ring (2021), Brulhart et al. (2021)

Contribution \Rightarrow Tax design shock in the context of a wealth tax

Bunching literature

 Seminal papers: Saez (2010), Kleven & Waseem (2013), Kleven (2016) Recent developments: Blomquist et al. (2021), Marx (2020)

 $Contribution \Rightarrow Dynamic \ bunching \ without \ polynomial \ imputation$



Institutional setting and data

Graphical Evidence: Bunching at reporting requirements (vs. tax rates)

Dynamic Bunching Approach

Results

Context: Wealth taxes in France (1982-2017)

Annual tax on the market value of net wealth for wealthy individuals

- Key features of the French wealth tax before 2018:
 - 1. Tax schedule: Progressive wealth tax above the exemption threshold
 - Top 2% in 2010 (800 K€)
 - Piecewise linear tax schedule with 5 brackets from 0.5% to 1.5% in 2013 Tax schedule
 - 2. Tax deductions and tax credits: Business-related assets, primary residence, SME's investments, charitable giving, tax ceiling, etc.
 - 3. **Reporting requirement**: Self-reported net wealth (no third-party reporting)

Reporting requirements to the wealth taxes



Wealth Tax Returns

Detailed

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Simplified

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Income and Wealth Tax Panel Data

Access to new panel administrative data:

- Linking income and wealth tax returns
- For the universe of taxpayers
- Since 2006

Descriptive statistics: 💿



Institutional setting and data

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Dynamic Bunching Approach

Results

Absence of Bunching at Kinks in the Tax Schedule

(a) $\Delta \tau$ of 0.2 pp at 1,290K \bowtie

(b) $\Delta \tau$ of 0.25pp at 2,530K \blacksquare



Bunching Appears When Kink=Exemption Threshold



Bunching Appears When Kink=Reporting Threshold 2011



No Discontinuity in Wealth Growth Rate before the Reform

Figure 2 - Average growth rate by taxable wealth, Pre-reform



Permanent Discontinuity in Wealth Growth Rates

Figure 3 – Average growth rate by taxable wealth, 2013-2017





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Empirical analysis

Wealth is a stock: we focus on wealth growth rates

- Avoid capturing mechanical increase in pre-existing stock
- Focus on the 2,570K simplification threshold introduced in 2013
 - Permanent scale-down in reporting requirements
- Define groups based on *pre-reform* distance to the simplification threshold in 2012



Motivation for A New Dynamic Bunching Method

Changes in distribution of wealth growth rates



Growth rate from 2011 to 2012

Growth rate from 2012 to 2013

Challenges:

- 1. How to compare (*normalize*) distribution of growth rates?
- 2. What is the right *counterfactual*?

New Dynamic Bunching Method

Methodology

- i Compute distribution of normalized growth rate around 2570K for treated groups
- ii Use control group to estimate a counterfactual distribution
- iii Comparison of the observed and counterfactual distribution within the excluded range
- We can measure
 - Estimate aggregate growth rate reduction at the group level (ITT)
 - Estimate proportion of bunchers (compliance rate)
 - Estimate growth rate reduction among the bunchers (LATE)
 - \rightarrow Allows to measure more than standard DiD

Step 1: Normalizing Distributions to Compare Treated Groups

Normalized growth rate: Compare observed growth rate with the growth rate that would make individuals locate at the simplification threshold

$$\tilde{g}_{i,2570}(W_{i,t}) = \underbrace{\frac{W_{i,t+1} - W_{i,t}}{W_{i,t}}}_{\text{actual growth rate}} - \underbrace{\frac{2570K - W_{i,t}}{W_{i,t}}}_{\text{grth rate to be at threshold}} = \frac{W_{i,t+1} - 2570K}{W_{i,t}}$$

• If $\tilde{g}_{i,2570} = 0$, individual *i* locates exactly at the threshold

• If $\tilde{g}_{i,2570} < 0$, *i* locates below the threshold.

Group just below the threshold [2500-2570]



Substantial bunching for groups below the threshold



Smaller bunching for groups above the threshold



Step 2: Use control group to derive counterfactual distributions

We use control group [2710,2780[to derive a counterfactual distribution.

We define a "placebo" threshold c_i

$$ilde{g}_{i,c_j}(W_{i,t}) = rac{W_{i,t+1} - c_j}{W_{i,t}}$$

Needs to be *equally distant* from the control group as the simplification threshold is for each treated group $T_j = [a_j, b_j]$

Identifying assumption:

In absence of the reform, treated and control groups (defined in 2012) would have the same distribution of normalized growth rate post-reform

Understanding placebo thresholds



Identifying Assumption Verified for Groups def. in 2011



Step 3: Computations of the estimates of interest

For each treated group, we compute

- The share of bunchers Details
- ► The average growth rate reduction (ITT) Details
- The growth reduction among bunchers (LATE) Details



Validity of the counterfactual distribution?

- Treated and control groups (def in 2012) have the same distribution of growth rate in 2012 and before <a>
- Treated and control groups (def in 2011) have the same distribution of normalized growth rate in 2012
- Control group is not affected by simplification threshold around 2570K in 2013 60



Institutional setting and data

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Dynamic Bunching Approach

Results

Large responses for those just below the threshold



Substantial although smaller responses for those far below



Even smaller responses for group very far below



Group just above the threshold shows smaller responses



No responses for those far above the threshold


Comparison: Diff-in-diff vs Dynamic bunching

	Wealth groups defined in 2012						
	Just	Far	Very Far	Just	Far		
	Below	Below	Below	Above	Above		
	Diff-in-diff						
Average effect	-0.77**	-0.38	-0.30	-0.16	0.14		
(ITT)	(0.34)	(0.32)	(0.31)	(0.34)	(0.36)		
	Dynamic bunching						
Average effect	-0.47***	-0.44***	-0.37***	-0.18***	-0.03		
(ITT)	(0.07)	(0.08)	(0.08)	(0.03)	(0.03)		
Share of	14.7***	8.5***	6.6***	3.9**	1.4***		
bunchers	(1.1)	(1.0)	(1.1)	(0.7)	(0.5)		
Effect among	-3.2***	-5.3***	-5.8***	-4.8***	-1.7		
bunchers (LATE)	(0.4)	(1.0)	(1.6)	(0.9)	(3.5)		

Table 1 – Impact of tax simplicity on growth rate

* p < 0.1, ** p < 0.05, *** p < 0.01. Clustered std. errors (taxpayer level). Bunching: Bootstraps (600 reps).

The reform has persistent long-term effects

We document the long-term cumulative effects of the reform

We find substantial responses for successive cohorts

- Large bunching for cohorts approaching the threshold after 2012
- We find evidence of growing responses over time Go
- ▶ ITT (x2) and share of bunchers (x1.6) for later cohorts
- Misreporting persists over time within taxpayers
 - \blacktriangleright Bunching lasts at least pprox 4 years after reform $^{\odot}$
 - Revenue cost of the reform is cumulative over years

► We estimate similar but less precise dynamic ITT with DiD robustness: 2011 reform

Mechanisms: The Role of Evasion

We link each taxpayer to detailed labor and capital income tax returns

- 1. No differences in assets composition before the reform 💿
- 2. No change in third-party reported incomes after the reform Go
 - Strongly indicative of tax evasion rather than real responses
 - Consistent with sharp, immediate bunching after the reform
- 3. Financial assets play a specific role
 - Taxpayers pushed-out from simplified regime by positive financial asset shocks Go
 - Growth in financial assets is harder to hide

Zero growth rate

Summing-up and Interpretation of Results

- $1. \ \mbox{No}$ discernable bunching at pure tax kinks
- 2. Significant bunching below exemption threshold
- 3. Sharp bunching responses at the simplification threshold
- 4. Larger responses just below threshold, but substantial far below too
- 5. Taxpayers above the threshold exhibit much lower bunching
- 6. Persistent responses until "pushed-out" by > 0 wealth shocks
- 7. No change in labor or capital income

Summing-up and Interpretation of Results

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Those results can be rationalized by a model of dynamic misreporting

- \blacktriangleright Wealth is a stock \rightarrow inter-temporal nature of misreporting
- Misreporting smoothing to remain in the simplified regime

Summing-up and Interpretation of Results

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Why do taxpayers value the simplified regime?

- Hassle cost/privacy:Taxpayers did not enter the wealth tax more Go
- More consistent with value coming from ease of misreporting

Conclusion and Policy Implications

- Debate on desirability of a wealth tax (Saez & Zucman (2019))
 - Looking at the EU experience is useful...
 - But estimated elasticities range 0.3 to 43 (Brulhart et al. (2021))
- We show that tax design matters for tax base elasticities
- Poor tax design choices have immediate, large and persistent implications for tax enforcement
 - Responses are large even when moving from more to less reporting
 - Suggests that information and enforcement deteriorate quickly
 - One-off information collection not enough, need close monitoring
- Our results inform a model of misreporting for wealth
 - Inter-temporal nature of misreporting when focusing on a stock

Appendix

Wealth Tax Base Back

- Business wealth: business wealth of owner-managers is fully exempt. Definition are sole-proprietors + individuals owning 25% or more of the stock of a company. Group of individuals (family members or business partners) who collectively owned a significant stakes in a business (20% or 34%) can exclude 75% of the corresponding assets from their net wealth.
- Primary residence: 30% of the value of a household's primary residence could be deducted from the tax base.
- > Art work: all art work is fully exempted.

Wealth Tax Schedule **Back**



Wealth Tax Schedule Back

	Wealth Bracket	Rate (%)	Exemption (Thousands)	Simplified Form (Thousands)
2007	[760-1,220] [1,220-2,420] [2,420-3,800] [3,800-7,270] [7,270-15,810]	0.55 0.75 1 1.3 1.65	760	None
2008	[15,810-[[770-1,240] [1,240-2,450] [2,450-3,850] [3,850-7,360] [7,360-16,020] [16,020-[1.8 0.55 0.75 1 1.3 1.65 1.8	770	None
2009	[790-1,280] [1,280-2,520] [2,520-3,960] [3,960-7,570] [7,570-16,480] [16,480-]	0.55 0.75 1 1.3 1.65 1.8	790	None
2010	[790-1,290] [1,290-2,530] [2,530-3,980] [3,980-7,600] [7,600-16,540] [16,540-[0.55 0.75 1 1.3 1.65 1.8	790	None
2011	[800-1,310] [1,310-2,570] [2,570-4,040] [4,040-7,710] [7,710-16,790] [16,790-]	0.55 0.75 1 1.3 1.65 1.8	1,300	3,000 (2725A)
2013-2017	[800-1,300] [1,300-2,570] [2,570-5,000] [5,000-10,000] [10,000]	0.50 0.70 1 1.25 1.5	1,300	2,570 (2042-C)

Descriptive statistics, taxpayers 2012 (Back)

	All	Sample:
Mean	[1,300K;∞[[2,300K-2,800K]
Demographics		
Age	67	67
% Married	68	73
% Non residents	5	0
% Retirees	67	69
% Wage Earners	39	37
% Self-Employed	24	24
% Landlords	72	76
Incomes & income tax		
Taxable income	119,937	127,201
Gross income	184,104	168,699
Pension benefits (%)	17	20
Wages (%)	23	25
Self-employment income (%)	11	14
Rental income (%)	15	19
Financial income (%)	22	20
Other (incl. Capital gains) (%)	11	2
Income Tax	29,086	28,976
Income tax rate (% gross income)	16	17
Wealth & wealth tax		
Taxable wealth ('000)	2,656	2,584
Wealth tax	16,919	12,533
Wealth tax rate (%)	0.6	0.5
Wealth tax (total, billion)	4.9	0.28
Tax units	289,119	22,331

Wealth distribution around the 2nd MTR 🔤



Wealth distribution around the 3d MTR 🔤



Wealth distribution around the 4th MTR 🔤



Wealth distribution around the 5th MTR 🔤



Creation of the simplification threshold at 3000K mid-2011



Simplification threshold stays at 3000K in 2012 🔤



Simplification threshold moves to 2,570K in 2013 📖



Additive and multiplicative forms for the placebo threshold



Group Just Below defined in 2011 🔤



Group Far Below defined in 2011 🔤



Groups Just Above defined in 2011 🔤



Groups Far Above defined in 2011 🔤



Share of bunchers B_i Buck

We define f() as the distribution of normalized growth rates \tilde{g}

$$B_{j} = \int_{a_{L}}^{0} [f_{T_{j}}(\tilde{g}_{2570}) - f_{T_{j}}^{counterfactual}(\tilde{g}_{2570})] d\tilde{g}_{2570}$$

$$= \int_{a_{L}}^{0} [f_{T_{j}}(\tilde{g}_{2570}) d\tilde{g} - \int_{a_{L}}^{0} f_{C}(\tilde{g}_{c_{j}})] d\tilde{g} = \sum_{a=a_{L}}^{0} [P_{T_{j}}(a) - P_{C}(a)]$$

▶ $P_Z(a)$: proportion of the group population in bin *a* of \tilde{g} for wealth $W \in$ group *Z* ▶ a_L : threshold below which $f_C(\tilde{g})$ and $f_{T_i}(\tilde{g})$ begin to diverge



Growth rate reduction Back

L

• Aggregate growth rate reduction at the group level $\Delta E_i(g)$:

$$\Delta E_j(g) = E(g|T_j) - E(g|C)$$

=
$$\sum_{a=a_L}^{a_U} [P(a|T_j) \times g(a|T_j) - P(a|C) \times g(a|C)]$$

 $\Delta E_j(g)$ measures the average response in the treated group $\mathcal{T}_j,$ comparable to ITT

• Growth rate reduction among the bunchers: $\Delta E_i(g)/B_i$





Growth rates for groups defined in 2010 🔤

A. Growth rate from 2009 to 2010 B. Growth rate from 2010 to 2011





C. Growth rate from 2011 to 2012



Growth rates for groups defined in 2012 🔤

A. Growth rate from 2009 to 2010 B. Growth rate from 2010 to 2011





C. Growth rate from 2011 to 2012



Cohort defined in 2012 (Back)



Cohort defined in 2014 (Back)



Cohort defined in 2016 (Back)



Dynamic Bunching for the 2016 Cohort 🔤



Group just below the threshold [2500,2570[



Differences in wealth composition in 2010? 🔤



C. Liabilities

D. Primary Residence



05

Differences in occupation in 2010?



C. Landlords



.03 .04 .05




Differences in income composition in 2010?



B. Self-Employment Income



C. Financial Income



D. Housing Income



Differences in tax rates in 2010? Book



E. Effective Tax Rate Before Tax Credits





Group just below the threshold [2500,2570[



Evolution of Income Back A. Taxable Income



C. Share of Real Estate Income





D. Share of Self-Employment Income



Note: Treated group just below and control group defined in 2012 with a normalized growth rate of -0.01 in 2013.

Evolution of tax rates Back

E. Effective Tax Rate Before Tax Credits



F. Effective Tax Rate After Tax Credits



Note: Treated group just below and control group defined in 2012 with a normalized growth rate of -0.01 in 2013.

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Bunchers who cross the threshold Back

What can we learn from bunchers who end up above the simplification threshold eventually?

Probability to be above the threshold in 2014 and 2016 •



Average annualized growth rate from 2010 to 2014 📖



Average annualized growth rate from 2010 to 2016 📖



Additional Results:

Difference-in-differences

ITT using Difference-in-Differences approach

- Individual-level DiD based on pre-reform distance to the simplification threshold
- Treatment intensity based on pre-determined level of wealth



ITT using Difference-in-Differences approach

- Individual-level DiD based on pre-reform distance to the simplification threshold
- Treatment intensity based on pre-determined level of wealth



 Evolution of wealth growth rates in the control group vs treated groups, before and after 2013

$$g_{it} = \frac{W_{i,t} - W_{i,t-1}}{W_{i,t}} = \sum_{j} \sum_{\substack{k=2008\\k\neq 2012}}^{2017} \beta_{jk} \cdot \mathbb{1}\{i \in T_j\} \times \mathbb{1}\{t=k\} + \alpha_i + \lambda_t + \varepsilon_{i,t}$$

Validity of control group: Growth rates 2009/2010, 2010/2011, and 2011/12 for gps defined in 2010 and in 2012

Taxpayers just below the threshold before the reform



Control group: Wealth group \in [2710,2850[. 95% IC.

	Dependent Variable: Wealth Growth Rate in percent						
	(1)	(2)	(3)	(4)			
	Wealth groups defined in 2012						
	Just Below [2500K,2570K[Far Below [2430K,2500K[Very Far Below [2360K,2430K[Just Above [2570K,2640K[
Pre-Period (2008-2009)	-0.23 (0.35)	-0.01 (0.33)	0.23 (0.33)	-0.13 (0.35)			
Pre-Period	-0.30	-0.32	-0.03	-0.48			
(2010-2011)	(0.34)	(0.33)	(0.32)	(0.35)			
Post-Period	-0.77**	-0.38	-0.30	-0.16			
(2013)	(0.34)	(0.32)	(0.31)	(0.34)			
Post-Period	-0.74**	-0.43	-0.16	-0.30			
(2014-2015)	(0.30)	(0.29)	(0.28)	(0.31)			
Post-Period	-0.63**	-0.19	-0.25	-0.23			
(2016-2017)	(0.29)	(0.27)	(0.27)	(0.30)			
Constant	3.56*** (0.07)						
Observations	241,259						
munulais	27,021						

Table 2 – Impact of tax simplicity on growth rate

* p < 0.1, ** p < 0.05, *** p < 0.01. Std. errors clustered at taxpayer level.

Ref. period: 2012. Control group: Wealth group \in [2710,2850[. Grth rates 2008-09 & 2009-10: 2.4%, 2009-10 & 2010-11: 8%, 2013-14 & 2014-15: 3%, 2015-16 & 2016-17: 1.8%.

Summary: Diff-in-diff approach

Effects of the introduction of simplificiation threshold at 2570 K in 2013

- Significant and long-lasting reduction of growth rate for people located just below the threshold in 2012
- Growth rate reduction of 0.6-0.8 pp each year : 25-30% of control group growth rate ⇒ Cumulative effect on taxable wealth over time
- ▶ No detectable effect for groups located above 2570K in 2012
- ▶ No detectable effect for groups located far below 2570K in 2012
- \Rightarrow What is driving the average response to the reform?

Wealth composition in 2010 for "movers in 2014" Back



Wealth composition in 2010 for "movers in 2016" (Back



Creation of simplification threshold in 2011

Limited reactions in 2011



Simplification threshold 2012

Significant reactions in 2012 for group located just below the threshold



2013: Removal of the simplification threshold

No more bunching around 3000K for those just below the threshold in $2012\,$



No reactions in 2012 and 2013 at 3000K for the control group of the main analysis



Exemption Thresholds

Bunching Responses at Exemption Thresholds before 2011 Back



Exemption Threshold is 760K€ in 2007

2011: 2nd Tax Threshold Becomes the Exemption Threshold Back



Bunching Responses at the New Exemption Threshold 🔤



Dynamic bunching by year and group

	Wealth groups defined in t-1						
Year	Just	Far	Very Far	V Very	Just	Far	
t	Below	Below	Below	Far Below	Above	Above	
		Average	e Growth rat	e reduction (in t)		
2013	-0.47***	-0.44***	-0.37***	-0.16**	-0.18***	-0.03	
	(0.07)	(0.08)	(0.08)	(0.08)	(0.03)	(0.025)	
2014	-0.76***	-0.82***	-0.56***	-0.11*	0.08*	0.04	
	(0.06)	(0.09)	(0.08)	(0.08)	(0.05)	(0.04)	
2017	-0.75***	-0.45***	-0.30***	-0.09	0.06*	0.04	
	(0.05)	(0.05)	(0.06)	(80.0)	(0.05)	(0.05)	
		Sha	re of bunche	ers in % (in t)		
2013	14.7***	8.5***	6.6***	3.5** [*]	´3.9***	1.4***	
	(1.1)	(1.0)	(1.1)	(1.0)	(0.7)	(0.4)	
2014	19.9***	13.5***	6.7***	1.9**	-4.0***	-2.0***	
	(1.1)	(1.0)	(0.8)	(0.8)	(0.8)	(0.5)	
2017	24.3***	10.7***	3.6***	1.0*	-4.3***	-1.7***	
	(1.0)	(1.0)	(0.9)	(0.6)	(1.1)	(0.6)	
*	n < 01 ** n	< 0.05 ***	n < 0.01 Bun	ching Bootstra	ups (600 reps)	-	