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

Bertrand Garbinti Jonathan Goupille-Lebret Mathilde Munoz CREST-ENSAE Univ Lyon - CNRS UC Berkeley

Stefanie Stantcheva Gabriel Zucman Harvard University UC Berkeley

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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



Simplified

## Bunching in reporting requirement $\gg$ 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
$\rightarrow$ 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

## Outline

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 ( $800 \mathrm{~K} €$ )
- 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



## Simplified

## 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:

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## Absence of Bunching at Kinks in the Tax Schedule

(a) $\Delta \tau$ of 0.2 pp at $1,290 \mathrm{~K}$ All

(c) $\Delta \tau$ of 0.3 pp at $3,980 \mathrm{~K}$ All

(b) $\Delta \tau$ of 0.25 pp at $2,530 \mathrm{~K}$

All
(d) $\Delta \tau$ of 0.35 pp at $7,600 \mathrm{~K}$ All


Bunching Appears When Kink=Exemption Threshold


## Bunching Appears When Kink=Reporting Threshold



## 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 2570 K 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

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

- 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 $c_{j}$

$$
\tilde{g}_{i, c_{j}}\left(W_{i, t}\right)=\frac{W_{i, t+1}-c_{j}}{W_{i, t}}
$$

Needs to be equally distant from the control group as the simplification threshold is for each treated group $T_{j}=\left[a_{j}, b_{j}[\right.$

## 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 Detais
- 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 ${ }^{\text {Go }}$
- Treated and control groups (def in 2011) have the same distribution of normalized growth rate in 2012 go
- Control group is not affected by simplification threshold around 2570 K in 2013 6o


## Outline

## Institutional setting and data

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

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

Table 1 - Impact of tax simplicity on growth rate

|  | Wealth groups defined in 2012 |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Just <br> Below | Far Below | Very Far Below | Just <br> Above | Far Above |
| Average effect (ITT) | $\begin{gathered} -0.77^{* *} \\ (0.34) \end{gathered}$ | $\begin{gathered} -0.38 \\ (0.32) \end{gathered}$ | $\begin{gathered} \text { iff-in-diff } \\ -0.30 \\ (0.31) \end{gathered}$ | $\begin{gathered} -0.16 \\ (0.34) \end{gathered}$ | $\begin{gathered} 0.14 \\ (0.36) \end{gathered}$ |
| Average effect (ITT) | $\begin{gathered} -0.47^{* * *} \\ (0.07) \end{gathered}$ | $\begin{gathered} \text { Dynz } \\ -0.44^{* * *} \\ (0.08) \end{gathered}$ | ic bunchi $-0.37 * * *$ $(0.08)$ | $\begin{aligned} & \mathrm{g} \\ & -0.18^{* * *} \\ & (0.03) \end{aligned}$ | $\begin{gathered} -0.03 \\ (0.03) \end{gathered}$ |
| Share of bunchers | $\begin{gathered} 14.7 * * * \\ (1.1) \end{gathered}$ | $\begin{gathered} 8.5^{* * *} \\ (1.0) \end{gathered}$ | $\begin{gathered} 6.6 * * * \\ (1.1) \end{gathered}$ | $\begin{gathered} 3.9^{* *} \\ (0.7) \end{gathered}$ | $\begin{gathered} 1.4^{* * *} \\ (0.5) \end{gathered}$ |
| Effect among bunchers (LATE) | $\begin{gathered} -3.2 * * * \\ (0.4) \\ \hline \end{gathered}$ | $\begin{gathered} -5.3^{* * *} \\ (1.0) \\ \hline \end{gathered}$ | $\begin{gathered} -5.8^{* * *} \\ (1.6) \\ \hline \end{gathered}$ | $\begin{gathered} -4.8^{* * *} \\ (0.9) \\ \hline \end{gathered}$ | $\begin{gathered} -1.7 \\ (3.5) \\ \hline \end{gathered}$ |

${ }^{*} \mathrm{p}<0.1,^{* *} \mathrm{p}<0.05,^{* * *} \mathrm{p}<0.01$. 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
- Bunching lasts at least $\approx 4$ years after reform Go
- 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 Go
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. 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

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Those results can be rationalized by a model of dynamic misreporting

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


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Why do taxpayers value the simplified regime?

- Hassle cost/privacy:Taxpayers did not enter the wealth tax more
- 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 bax



## Wealth Tax Schedule Back

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

## Descriptive statistics, taxpayers 2012

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

## Wealth distribution around the 2nd MTR

(a) 2006
(b) 2007

(c) 2008


(d) 2009


## Wealth distribution around the 3d MTR

(a) 2006

(c) 2008

(b) 2007

(d) 2009


## Wealth distribution around the 4th MTR Back

(a) 2006

(c) 2008

(b) 2007

(d) 2009


## Wealth distribution around the 5th MTR Back

(a) 2008

(c) 2013

(b) 2009

(d) 2014


## Creation of the simplification threshold at 3000K mid-2011



## Simplification threshold stays at 3000K in 2012



## Simplification threshold moves to $2,570 \mathrm{~K}$ in 2013 Back



## Additive and multiplicative forms for the placebo threshold



## Group Just Below defined in 2011 back



## Group Far Below defined in 2011 back



## Groups Just Above defined in 2011 back



## Groups Far Above defined in 2011 back



## Share of bunchers $B_{j}$ Back

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

$$
\begin{aligned}
B_{j} & =\int_{a_{L}}^{0}\left[f_{T_{j}}\left(\tilde{g}_{2570}\right)-f_{T_{j}}^{\text {counterfactual }}\left(\tilde{g}_{2570}\right)\right] d \tilde{g}_{2570} \\
& =\int_{a_{L}}^{0}\left[f_{T_{j}}\left(\tilde{g}_{2570}\right) d \tilde{g}-\int_{a_{L}}^{0} f_{C}\left(\tilde{g}_{c_{j}}\right)\right] d \tilde{g}=\sum_{a=a_{L}}^{0}\left[P_{T_{j}}(a)-P_{C}(a)\right]
\end{aligned}
$$

- $P_{Z}(a)$ : proportion of the group population in bin a of $\tilde{g}$ for wealth $W \in \operatorname{group} Z$
- $a_{L}$ : threshold below which $f_{C}(\tilde{g})$ and $f_{T_{j}}(\tilde{g})$ begin to diverge



## Growth rate reduction Back

- Aggregate growth rate reduction at the group level $\Delta E_{j}(g)$ :

$$
\begin{aligned}
\Delta E_{j}(g) & =E\left(g \mid T_{j}\right)-E(g \mid C) \\
& =\sum_{a=a_{L}}^{a_{U}}\left[P\left(a \mid T_{j}\right) \times g\left(a \mid T_{j}\right)-P(a \mid C) \times g(a \mid C)\right]
\end{aligned}
$$

$\Delta E_{j}(g)$ measures the average response in the treated group $T_{j}$, comparable to ITT

- Growth rate reduction among the bunchers: $\Delta E_{j}(g) / B_{j}$



Back

## Growth rates for groups defined in 2010 back

A. Growth rate from 2009 to 2010

C. Growth rate from 2011 to 2012

B. Growth rate from 2010 to 2011


## Growth rates for groups defined in 2012 Back

A. Growth rate from 2009 to 2010

C. Growth rate from 2011 to 2012

B. Growth rate from 2010 to 2011


## Cohort defined in 2012 Back


(a) Normalized growth rate

(b) Growth rate reduction

## Cohort defined in 2014 Back


(a) Normalized growth rate

(b) Average growth rate reduction

## Cohort defined in 2016 Back


(a) Normalized growth rate

(b) Average growth rate reduction

## Dynamic Bunching for the 2016 Cohort Baxt

A. Just below

C. Just Above

B. Far Below

D. Far Above


## Group just below the threshold [2500,2570[



## Differences in wealth composition in 2010?

A. Housing Assets

C. Liabilities

B. Financial Assets

D. Primary Residence


## Differences in occupation in 2010?

## A. Self Employed


C. Landlords


D. Wage Earners


## Differences in income composition in 2010?

A. Taxable Income

C. Financial Income

B. Self-Employment Income

D. Housing Income


## Differences in tax rates in 2010?

## E. Effective Tax Rate Before Tax Credits



## F. Effective Tax Rate After Tax Credits



## Group just below the threshold [2500,2570[



## Evolution of Income вack

## A. Taxable Income


C. Share of Real Estate Income

## B. Share of Financial 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 .

## 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


(a) 2014

(b) 2016

## Average annualized growth rate from 2010 to 2014 васк



## 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

$$
g_{i t}=\frac{W_{i, t}-W_{i, t-1}}{W_{i, t}}=\sum_{j} \sum_{\substack{k=2008 \\ k \neq 2012}}^{2017} \beta_{j k} \cdot \mathbb{1}\left\{i \in T_{j}\right\} \times \mathbb{1}\{t=k\}+\alpha_{i}+\lambda_{t}+\varepsilon_{i, t}
$$

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



Notes: Wealth groups defined in 2012. Reference period: 2012.
Control group: Wealth group $\in[2710,2850[.95 \%$ IC.

Table 2 - Impact of tax simplicity on growth rate
Dependent Variable: Wealth Growth Rate in percent
(1) (2) (3) (4)
(4)

Wealth groups defined in 2012
Far Below Very Far Below Just Above [2500K,2570K[ [2430K,2500K[ [2360K,2430K[ [2570K,2640K[

| Pre-Period | -0.23 | -0.01 | 0.23 | -0.13 |
| :--- | :---: | :---: | :---: | :---: |
| $(2008-2009)$ | $(0.35)$ | $(0.33)$ | $(0.33)$ | $(0.35)$ |
|  |  |  |  |  |
| 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) | $(0.29)$ | $(0.27)$ | $(0.27)$ | $(0.30)$ |
|  |  |  | $3.56 * * *$ |  |
| Constant |  | $(0.07)$ |  |  |
|  |  | 241,259 |  |  |
| Observations |  | 27,021 |  |  |
| Individuals |  |  |  |  |

${ }^{*} \mathrm{p}<0.1,{ }^{* *} \mathrm{p}<0.05,^{* * *} \mathrm{p}<0.01$. 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 $\Rightarrow$ 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

(a) Share of housing assets

(b) Share of financial assets

Wealth composition in 2010 for "movers in 2016" Back

(a) Share of housing assets

(b) Share of financial assets

## 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 3000 K 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 вaкk



Fxemntion Threshold is $760 \mathrm{~K} €$ in 2007

## 2011: 2 ${ }^{\text {nd }}$ Tax Threshold Becomes the Exemption Threshold Back

(a) 2009-2010: Only a MTR Threshold

(b) 2011: Becomes the exemption threshold


## Bunching Responses at the New Exemption Threshold



## Dynamic bunching by year and group

| Year <br> t | Wealth groups defined in $\mathrm{t}-1$ |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Just <br> Below | Far Below | Very Far Below | $\checkmark$ Very <br> Far Below | Just <br> Above | Far Above |
| Average Growth rate reduction (in t) |  |  |  |  |  |  |
| 2013 | $\begin{gathered} -0.47^{* * *} \\ (0.07) \end{gathered}$ | $\begin{gathered} -0.44^{* * *} \\ (0.08) \end{gathered}$ | $\begin{gathered} -0.37^{* * *} \\ (0.08) \end{gathered}$ | $\begin{gathered} -0.16^{* *} \\ (0.08) \end{gathered}$ | $\begin{gathered} -0.18 * * * \\ (0.03) \end{gathered}$ | $\begin{gathered} -0.03 \\ (0.025) \end{gathered}$ |
| 2014 | $\begin{gathered} -0.76 * * * \\ (0.06) \end{gathered}$ | $\begin{gathered} -0.82^{* * *} \\ (0.09) \end{gathered}$ | $\begin{gathered} -0.56^{* * *} \\ (0.08) \end{gathered}$ | $\begin{aligned} & -0.11^{*} \\ & (0.08) \end{aligned}$ | $\begin{aligned} & 0.08^{*} \\ & (0.05) \end{aligned}$ | $\begin{gathered} 0.04 \\ (0.04) \end{gathered}$ |
| 2017 | $\begin{gathered} -0.75 * * * \\ (0.05) \end{gathered}$ | $\begin{gathered} -0.45 * * * \\ (0.05) \end{gathered}$ | $\begin{gathered} -0.30^{* * *} \\ (0.06) \end{gathered}$ | $\begin{gathered} -0.09 \\ (0.08) \end{gathered}$ | $\begin{aligned} & 0.06^{*} \\ & (0.05) \end{aligned}$ | $\begin{gathered} 0.04 \\ (0.05) \end{gathered}$ |
| Share of bunchers in \% (in t ) |  |  |  |  |  |  |
| 2013 | $\begin{gathered} 14.7^{* * * *} \\ (1.1) \end{gathered}$ | $\begin{gathered} 8.5^{* * *} \\ (1.0) \end{gathered}$ | $\begin{gathered} 6.6^{* * *} \\ (1.1) \end{gathered}$ | $\begin{gathered} 3.5^{* * *} \\ (1.0) \end{gathered}$ | $\begin{gathered} 3.9 * * * \\ (0.7) \end{gathered}$ | $\begin{gathered} 1.4^{* * *} \\ (0.4) \end{gathered}$ |
| 2014 | $\begin{gathered} 19.9^{* * *} \\ (1.1) \end{gathered}$ | $\begin{gathered} 13.5^{* * *} \\ (1.0) \end{gathered}$ | $\begin{gathered} 6.7 * * * \\ (0.8) \end{gathered}$ | $\begin{aligned} & 1.9^{* *} \\ & (0.8) \end{aligned}$ | $\begin{gathered} -4.0^{* * *} \\ (0.8) \end{gathered}$ | $\begin{gathered} -2.0^{* * *} \\ (0.5) \end{gathered}$ |
| 2017 | $\begin{gathered} 24.3^{* * *} \\ (1.0) \end{gathered}$ | $\begin{gathered} 10.7^{* * *} \\ (1.0) \end{gathered}$ | $\begin{gathered} 3.6^{* * *} \\ (0.9) \end{gathered}$ | $\begin{aligned} & 1.0^{*} \\ & (0.6) \end{aligned}$ | $\begin{gathered} -4.3^{* * *} \\ (1.1) \end{gathered}$ | $\begin{gathered} -1.7^{* * *} \\ (0.6) \end{gathered}$ |

