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

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Abstract

We study a reform of the French wealth tax that dramatically reduced the amount of information that taxpayers must self-report below a certain level of wealth. Combining administrative micro-data with dynamic bunching and difference-in-differences approaches, we find large behavioral responses to this switch to a low-information regime. The reform caused a 0.5 percentage points average decrease in the annual growth rate of wealth reported by treated taxpayers each year following the switch to the low-information regime. This reduction is driven by a 4 percentage points decrease for taxpayers bunching at the information discontinuity threshold. Consistent with opacity leading to lower compliance, treated households do not experience a real change in their (third-party) reported labor and capital income. The wealth tax base becomes much more elastic in the low-information regime, illustrating the first-order role of information policy choices for tax base elasticities.

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1 Introduction

There has been a flurry of research on behavioral responses to taxes over the last decades. Following the work of Feldstein (1995) and Gruber and Saez (2002), a large literature has estimated the elasticity of taxable income. More recently, a nascent literature attempts to estimate the elasticity of taxable wealth (e.g., Seim, 2017; Duran-Cabré et al., 2019; Jakobsen et al., 2020; Agrawal et al., 2020; Brülhart et al., 2021; Londoño-Vélez and Avila-Mahecha, 2022). These estimates are critical to formulate empirically-grounded statements about optimal tax policy and to inform the public debate, such as the global discussion about the desirability of taxing top-end wealth.

A key difficulty in mapping empirical tax elasticities to optimal policy is that tax base elasticities are not structural parameters: they can be affected by how taxes are designed. Policy choices such as the stringency of reporting requirements and enforcement strategies can make tax bases more or less elastic (Slemrod and Kopczuk, 2002; Keen and Slemrod, 2017). Because these features of tax design vary over time and across countries, elasticities estimated in specific contexts can lack external validity. To address this limitation, ideally one would want to isolate the causal effect on behavior of key features of tax design. In practice, however, this estimation is difficult because of several empirical challenges. First, while tax rates often change, sharp changes in tax design occur less frequently, making it hard to find compelling sources of variation allowing for the estimation of causal effects. Second, when fundamental changes to tax design occur, these reforms are often paired with rate changes, complicating identification. Third, in the specific context of wealth taxation, few countries collect individual-level administrative data on wealth.

This paper makes progress on this issue by quantifying the effect of information reporting policies—a key dimension of tax design—on taxpayer behavior and tax base elasticities. We do so by studying a reform of the French wealth tax that scaled back information reporting requirements for some taxpayers but not others. We make use of exhaustive longitudinal data on the universe of French wealth taxpayers, matched to their income tax returns.[1] We uncover large behavioral responses to the switch to a low-information regimes, dramatically larger than the effect of the tax rate itself.

The specific features of the reform we study allow us to overcome the main challenges that

[1]These data are new; they are used in contemporaneous papers to study the effects of the French wealth tax on entrepreneurs' investment behaviors (Bach et al., 2020) and charitable giving (Cage and Guillot, 2021).

have made identification elusive in this field of research. France has had a progressive wealth tax since the 1980s, based on self-reported net wealth. Until 2011, all taxpayers had to report detailed information about their wealth on their wealth tax return, asset type by asset type. But in 2011 simplified reporting requirements were introduced, allowing taxpayers with less than €3 million in wealth to file a simplified return reporting only total gross assets and liabilities, with no breakdown by components—dramatically reducing the amount of information in the hands of the tax authority. The wealth threshold for this simplified filing was then reduced to €2.57 million in 2013, a level corresponding to a kink in the wealth tax schedule. Because the 2013 reform only affected reporting requirement (tax rates did not change), this natural experiment allows us to estimate the causal effect of the information regime on taxpayer behavior, keeping tax rates fixed.

To analyze this reform, we develop a new method of dynamic bunching. We study the distribution of annual wealth growth rates for taxpayers with wealth around the information discontinuity threshold pre-reform. We uncover sharp bunching at this threshold: some taxpayers very close to the threshold pre-reform start reporting zero growth post-reform. We compare the distribution of wealth growth for taxpayers around the threshold to a counterfactual distribution constructed using the observed growth rates of similar but unaffected taxpayers. This methodology allows us to map our bunching estimator to the causal identification framework of Angrist et al. (1996) and to identify compliers within the bunching segment. In turn, this enables us to estimate the local average treatment effect of reducing reporting requirement and to identify what share of taxpayers took advantage of this reduction. We confirm our findings using a second research design, a difference-in-difference analysis comparing taxpayers just below the simplification threshold pre-reform to taxpayers just above.

Our main quantitative findings can be summarized as follows. First, the reform caused a 0.5 percentage points average decrease in the annual growth rate of wealth reported by treated taxpayers each year following the switch to the low-information regime. This effect is cumulative over time: taxpayers under-report a growing fraction of their wealth year after year to stay in the low-information regime, implying that the reform has growing revenue costs. This average behavioral response can be disentangled as follows: around 15% of taxpayers respond massively, while 85% do not respond at all. The average reduction in wealth growth rates is driven by a 4 percentage points decrease for taxpayers bunching at the information discontinuity threshold. Along a large

number of dimensions there is no evidence that these taxpayers changed their real behavior; these households, in particular, did not experience any change in their (third-party) reported labor and capital income. Behavioral responses to the reform appear to be pure tax evasion, consistent with opacity leading to lower compliance.

Second, the wealth tax base becomes dramatically more elastic in the low-information regime. We show this by contrasting the elasticity of reported wealth at €2.57 million when this threshold was a pure kink in the schedule (i.e., before 2013) and when it is both a kink and an information reporting discontinuity (i.e., from 2013 on). The elasticity associated with the pure kink is very low. But it increases by more than an order of magnitude when the marginal tax rate kink is supplemented by the information discontinuity, illustrating the first-order importance of simple information policy choices for tax base elasticities.

Third, we can explore in detail how taxpayers react to the reduced reporting requirements. Using the income tax returns we can show that there is no corresponding change in reported labor or capital income that matches the change in taxable wealth. Furthermore, we can track which asset categories play the most important role when adjusting to the simplification reform and find that taxpayers who bunch below the simplification threshold end up crossing it after they experience large positive shocks to their financial assets which become "too hard to hide." There is no such shock observed for real estate assets. We can also show that, in addition to sharp bunching around the reporting discontinuity, taxpayers further below the threshold also reduce their growth rates significantly, which speaks to a greater ease of misreporting. Finally, we show that the simplified reporting requirements did not lead to more people entering the wealth tax eligibility area, since bunching at the exemption threshold returns to a similar magnitude after an initial adjustment period.

These results inform the ongoing debate about wealth taxation. A growing literature estimates behavioral responses to wealth taxes in countries such as Colombia, Denmark, France, Spain, and Switzerland. While the estimated elasticities usefully inform policy discussions, our findings highlight that tax base elasticities are heavily affected by the design of the tax, which varies over time and across countries. This can rationalize the wide range of elasticities found in different countries and time periods (e.g., Scheuer and Slemrod, 2021). The French experiment studied in this paper constitutes perhaps an extreme illustration of policymakers undermining tax adminis-

tration through specific design features. But just as specific design choices (or non-choices) can contribute to increasing tax elasticities, so too can other choices reduce them, including mandating pre-populated returns, collecting and using information automatically transmitted by foreign financial institutions, or taxing non-residents (e.g., Saez and Zucman, 2022). Our quantitative findings suggest that these choices are likely to play a critical role in the success or failure of future wealth taxes. All these design choices have costs, and a full cost-benefit analysis of these choices falls outside the scope of this paper. In the case of the information reform we study, we show that the private gains from reduced reporting burdens were small relative to the social costs stemming from increased evasion.

The rest of this paper proceeds as follows. Section 2 relates our work to the literature. In Section 3 we describe the institutional framework and the administrative tax data we use. Section 4 provides graphical evidence of the effect of information reporting requirements vs. tax rates on reported wealth. We then present our dynamic bunching and difference-in-difference results in Section 5 before studying mechanisms in Section 6. Section 7 concludes.

2 Related Literature

2.1 Literature on Tax Base Elasticities, Tax Design, and Tax Compliance

Our paper first relates to the literature on tax base elasticities and tax design. In seminal contributions, Slemrod and Kopczuk (2002) and Keen and Slemrod (2017) theoretically emphasize that behavioral responses to tax rates are closely related to the design of the tax system. Our contribution to this literature is to uncover and quantify the key role of information reporting policies on tax base elasticities. Information policies are a key dimension of the design of any tax, and are especially important for wealth taxes which have historically been based on self-reported wealth. The combination of an unusual natural quasi-experiment with high-quality administrative wealth tax micro-data allows us to overcome the traditional identification challenges in this field.

Our paper complements studies of how other dimensions of tax design, most importantly enforcement strategies, interact with tax base elasticities. Fack and Landais (2016) study a 1983 reform that tightened reporting requirements to claim charitable deductions for the individual in-

come tax in France; they find that it led to a substantial decline in the absolute value of the elasticity of reported contributions. Kopczuk (2005) shows that elasticities with respect to US federal income tax rates depend on deductions available and cannot be considered as structural parameters. Recently, Basri et al. (2021) study the effect of a tax administration reform in Indonesia and find some evidence of a lower corporate income tax base elasticity for firms subject to stronger monitoring.

Our paper is also closely related to the literature on tax enforcement and tax evasion (e.g., Kleven et al., 2011; Almunia and Lopez-Rodriguez, 2018; Pomeranz, 2015; Bachas and Soto, 2021; Harju et al., 2019; Brockmeyer et al., 2021). A challenge in this literature is to identify tax evasion responses by wealthy taxpayers. These responses matter a great deal because the wealthy account for a large fraction of tax revenues, but they are hard to estimate due to the lack of exogenous variations in enforcement at the top of the distribution.[2] The reform we exploit affects taxpayers at roughly the 99.5^{th} percentile of the wealth distribution in France, allowing us to break ground on this issue. We show that behavioral responses are highly heterogenous: 15% of affected taxpayers respond strongly to the switch to a low-information regime (by significantly increasing evasion) while 85% do not respond at all.

We also add to the literature on tax simplicity. This body of work mostly focuses on low-income taxpayers, as simplified tax returns tend to be available at the lower end of the income distribution.[3] By contrast, we focus on behavioral responses to simplified tax regimes in the wealth tax context, which informs the ongoing debate about wealth taxation. In our setting, the reduced private filing costs for taxpayers benefiting from the simplified regime are far outweighed by the increase in social costs stemming from lower tax compliance. This result highlights the potential costs of simplification reform in the context of the taxation of top-end wealth.

2.2 Literature on Behavioral Responses to Wealth Taxes

Second, our paper contributes to the growing literature on behavioral responses to annual wealth taxes, reviewed in Scheuer and Slemrod (2021). The sharp variations introduced by the French

[2] Exceptions include Johannesen et al. (2020) who document reductions in tax evasion following improvements in information reporting in the United States; see also Alstadsæter et al. (2019) and Guyton et al. (2021).

[3] Aghion et al. (2017) study how French self-employed individuals react to tax simplicity and find that entrepreneurs bunch at the threshold to benefit from simplified income tax regimes. Other recent studies include Benzarti (2020), Zwick (2021), Colombo et al. (2014), De Neve et al. (2021) and Blesse et al. (2019).

institutional setting allow us to disentangle behavioral responses to marginal tax rates (kinks), exemption thresholds, and information reporting requirements. We provide the first estimates of behavioral responses to changes in information reporting requirements, keeping everything else (included discontinuities in tax rates) constant. We also provide what are to our knowledge the first estimates of bunching responses at pure kinks (i.e., changes in marginal tax rates above the exemption threshold). Our findings suggest that a large part of the behavioral responses to exemption thresholds in the wealth tax schedule estimated in previous studies may be driven by responses to reporting requirements rather than changes in the marginal tax rate.

2.3 Literature on Bunching

Methodologically, we contribute to the literature on bunching at kink points first proposed by Saez (2010) and extended to notches by Kleven and Waseem (2013). The standard bunching method has been widely applied to many contexts; see Kleven (2016) for a review. As discussed in the literature, bunching estimates rely on parametric assumptions (Blomquist et al., 2021) and may capture short-term responses, frictions, and avoidance as opposed to true, long-term responses to taxes (Jakobsen et al., 2020).[4]

We develop a new bunching estimator where we compare the wealth growth rates of taxpayers with different levels of pre-reform wealth. A novelty of our method is to build a counterfactual distribution using placebo wealth growth rates of taxpayers with different pre-reform wealth levels. We do not need parametric assumptions to build our estimator, and thus do not need to assume similar preferences in our treatment and control groups (Blomquist et al., 2021). Our methodology also allows us to map our bunching estimator to the causal identification framework of Angrist et al. (1996). This enables us to estimate the local average treatment effect of the reduction in reporting requirement and what share of taxpayers took advantage of this reduction, i.e., the compliers.[5] The dynamic dimension of our setting also allows us to verify whether our bunching estimator captures long-term real responses to changes in the wealth tax schedule. We show that the intent-to-treat

[4] Pollinger (2021) shows that bunching can capture participation and intensive margin response, and develops an alternative bunching estimator to measure these responses.

[5] Closely related to our contribution, Diamond and Persson (2016) and Chen et al. (2021) also derive estimators to distinguish intent-to-treat from local average treatment effects, but must rely on parametric assumptions when building their counterfactuals.

effect estimated in a standard difference-in-differences design has similar magnitude and is not statistically different from the coefficient derived from our dynamic bunching methodology.

3 Institutional Framework and Data

3.1 Wealth Taxation in France

The *impôt sur la fortune* (ISF) was an annual progressive wealth tax implemented in France from 1989 to 2017.[6] It applied to French tax residents with net taxable wealth above an exemption threshold. This exemption threshold varied over time, as we discuss below, but it was always located above the 97^{th} percentile of the household wealth distribution during our period of study. Appendix B provides a detailed description of the features of the French wealth tax. We summarize here the key elements needed for our analysis.

Tax base. The base of the ISF was net wealth above an exemption threshold. Net wealth was defined as financial and non-financial assets minus debts and was assessed as of January 1^{st} of year t for fiscal year t. Thus, in calendar year t, taxpayers filled out income tax returns and paid income tax for income earned in $t-1$, but filled out wealth tax returns and paid wealth tax on wealth as of January 1^{st} of year t. For French tax residents, the base included assets held worldwide.[7] The exemption threshold ranges from around 800,000 €in 2010 (roughly the top 2% of the wealth distribution) to 1.3 million €after 2011 (roughly the top 1% of the wealth distribution).

Several major exemptions reduced the tax base (see Appendix B for complete details). First and most importantly, the business wealth of owner-managers was exempt. Owner-managers were defined sole proprietors and individuals owning 25% or more of the stock of a company. In addition, groups of individuals (e.g., family members or business partners) who collectively owned significant stakes in a business (of at least 20% or 34% depending on the business) could exclude three-quarters of the corresponding assets from their net wealth. Thus in practice, the vast majority

[6] The first progressive annual wealth tax in France was implemented in 1982 and called the *impôt sur les grandes fortunes*. It was abolished in 1986 after the election of a new government. In 2018, the ISF was abolished and replaced by a progressive tax on real estate wealth, called the *impôt sur la fortune immobilière*.

[7] Non-residents could be liable for the wealth tax under certain conditions, as detailed in Appendix B. Non-residents represent 3% of our estimation sample. We exclude them from our benchmark analysis; results are unchanged if we include them.

of private business wealth and large stakes in public companies were exempt. Second, 30% of the value of a household's primary residence could be deducted from the tax base. Third, artwork was exempt.

Tax credits for the wealth tax are also explained in Appendix B but are not essential for the analysis in this paper. They concern investments in small and medium enterprises, charitable giving, and a tax ceiling mechanism capping the amount of wealth tax owed by taxpayers as a fraction of their taxable income.

Tax schedule. The ISF had a progressive tax schedule, with five to six wealth tax brackets over our study period (2007 to 2017). For instance, marginal tax rates ranged from 0.5% for the first bracket to 1.5% for the top bracket in 2013. Panel B of Figure 1 depicts the marginal tax rates in each bracket from 2007 to 2017.

Reporting requirements. Wealth was self-reported by households, who were responsible for establishing whether their net wealth exceeded the exemption threshold. Taxpayers with wealth below the threshold did not have to file a wealth tax return (nor did they have to report their wealth to tax authorities anywhere else). Taxpayers above the threshold had to file a wealth tax return (Form 2725) listing the value of each components of their net taxable wealth (such as primary residence, other real estate, stocks, bank deposits, etc.), as detailed in Appendix Table B.3. There was very limited third-party reporting of assets to the tax authority, and wealth tax returns were not pre-filled: taxpayers had to self-report each component of their net wealth. However, the tax administration provided detailed guidelines for taxpayers to properly estimate the value of their assets; the general principle was to use prevailing market prices. If noncompliance was uncovered upon audit, taxpayers could be required to file amended returns up to 10 years backwards.[8]

3.2 Wealth Tax Reforms in 2011–2013

We focus on reforms implemented in the period 2011 to 2013, summarized in Figure 1.

[8] Amended returns had generally to be filed up to 3 years backwards, but this was extended to 6 years in case the tax administration found an asset had not been reported at all (e.g., a taxpayer failed to report owning a secondary home, or failed to file a return), and to 10 years in case of unreported foreign assets (e.g., a taxpayer failed to report an offshore bank account).

Changes to reporting requirements. Regarding reporting requirements, the first reform, enacted in June 2011, introduced a simplified wealth tax return for taxpayers with taxable wealth below €3 million.[9] In this simplified return, taxpayers only report total net and gross taxable wealth, as well as three specific tax credits (charitable giving, direct and indirect investment in SME). We call this threshold the "simplification threshold." Households do not have to send any justification of their self-assessed wealth to the tax authority, but must keep all information and intermediary steps used for this computation.[10] The 2011 reform also increased the exemption threshold from €0.8 million to €1.3 million, which reduced the number of households subject to the tax by a factor of about two. After the election of a new president in May 2012, a second reform was passed in July 2012. This reform lowered the simplification threshold from €3 million to €2.57 million, effective in 2013. Panel A of Figure 1 summarizes the changes in information reporting requirements over our period of study.

Figure A.1 illustrates the simplification reform. It shows screenshots of both the detailed wealth tax return (left panel) and the simplified wealth tax return (right panel). The corresponding summary text of all reporting items and fields is summarized in Table B.3.

Tax schedule changes. Regarding the tax schedule, there was a series of convoluted changes. Panel B of Figure 1 summarizes the different rate and bracket changes over our period of study. The 2011 reform aimed to dramatically reduce the progressivity of the tax schedule. Indeed, prior to it, the tax schedule featured six marginal rates ranging from 0.55% to 1.8%. The 2011 reform replaced them with a two-bracket schedule with an average tax rate of 0.25% between €1.3 and €3.0 million and an average rate of 0.5% above €3.0 million. This part of the reform was scheduled to take effect in 2012. However, the 2012 reform passed by the new government, essentially reversed the changes to the tax schedule. As a result, taxpayers never actually benefitted from the more generous schedule enacted in June 2011. The 2012 reform also instituted a slightly amended schedule from 2013 on, close to the pre-2011-reform schedule.[11] The dashed line in the figure represents the anticipated 2012 tax schedule, which ended up never being put in place.

[9] Accordingly, the deadline for filing a 2011 wealth tax return was postponed from June to the end of September.

[10] Starting in 2012, the simplified form could also be filed as part of the income tax return.

[11] Relative to the system in place before the 2011 reform, the 2013-onward tax system featured somewhat lower marginal tax rates and removed the top tax bracket.

Focus of the paper. In this paper, we focus on two salient changes that are not confounded by changes in other features of the tax, thus facilitating interpretation. The first is the reduction of the simplification threshold from €3 million to €2.57 million in 2013. There is no other policy change occurring around this specific wealth level in the years before, including, or after 2013. This reform therefore allows us to estimate the effect of simplified reporting requirements on reported wealth. Second, we analyze the effect of the increase in the exemption threshold from €0.8 million in 2010 to €1.3 million in 2011. This allows us to contrast behavioral responses at a pure marginal rate discontinuity (in 2010, the marginal tax rate jumps from 0.55% to 0.75% at €1.3 million but nothing else varies) vs. a marginal rate plus information discontinuity (in 2011, not only does the marginal rate increases at €1.3 million but taxpayers must also file a tax return since they become subject to the tax).

3.3 Administrative Tax Data and Summary Statistics

Our analysis builds on a new administrative longitudinal dataset from the French tax administration (*Direction Generale des Finances Publiques* or DGFIP). This dataset contains the universe of wealth tax and income tax returns from 2006 to 2017. We can track individual taxpayers across years thanks to their unique tax identifier. For taxpayers subject to the wealth tax, the tax returns include the amount of gross and net taxable wealth, tax credits, and for taxpayers filing a regular (i.e., not simplified) return, assets broken down by type, itemized tax-exempt assets, and itemized tax deductions; see Appendix Table B.3. We also have detailed data on all entries of the income tax returns, including all capital and labor incomes, basic demographic information, and information on taxpayers' occupation.

Columns 1 and 2 of Table 1 reports summary statistics for taxpayers liable to the wealth tax in 2010 and 2012. The increase in the exemption threshold between 2010 and 2011 is reflected in the twice as low number of taxpayers in column 2 (289,119 as compared to 590,031). Wealth taxpayers are on average 66 years old; 67% of them are retirees and around 70% are landlords. Their taxable income is on average 90,000 €in 2010 and (following the increase in the exemption threshold) 120,000 in 2012. Their average wealth is 1.8 million in 2010 and 2.7 million in 2012. The wealth

composition of these taxpayers skews towards financial assets (62%) and housing assets (46%). The primary residence accounts for, on average 17% of all assets. Figure A.3 plots the composition of taxable wealth by wealth level right before the reforms (in 2010). The major components of wealth can be categorized under financial assets, primary residence, and other housing/real estate assets. Financial assets are always the largest category, but their importance increases from just below 40% for taxpayers with 750,000 in wealth to 60% for taxpayers with 3 million taxable wealth. Real estate assets other than the primary residence account for a roughly constant share (30%) of taxable wealth. The value of the primary residence is around 30% at the lowest wealth levels and decreases to just 10% for taxpayers with 3 million in taxable wealth.

4 Graphical Evidence: Bunching at reporting versus tax rate discontinuities

In this section, we present graphical evidence of behavioral responses to each of the three discontinuities in the wealth tax, namely those created by wealth tax rates, exemption thresholds, and simplification thresholds.

4.1 Variations in Wealth Tax Rates

We start by studying behavioral responses to changes in marginal tax rates. From 1989 to 2017, taxable net wealth was taxed at a progressive rate above the exemption threshold. The tax rates in different tax brackets and their changes over time are illustrated in Panel B of Figure 1. These variations typically introduce "kinks" in the budget set of taxpayers by changing the marginal tax rate they face at different levels of wealth.

For the sake of space, we focus on year 2010 in the main text. This year precedes the important variations in the exemption and simplification thresholds so that all taxpayers file the same detailed wealth tax return. However, similar results hold for all years and across all tax brackets (see Figures A.5- A.7).

Figure 2 presents bunching evidence to kink points in the wealth tax schedule in 2010. In each panel, we focus on a given tax bracket threshold (represented by the vertical red line), which each

corresponds to a different percentage point increase in marginal tax rates: a 0.2 percentage point increase in the marginal tax rate at 1,200K in Panel A, a 0.25 pp. increase at 2,530K in Panel B, a 0.3 pp. increase at 3,900K in Panel C; and a 0.35 pp. increase at 7,600K. We group households into bins of taxable wealth and plot the observed counts of households by bins around the tax kinks. The figure reveals that the distribution of taxpayers below and above the tax kink is smooth for all tax brackets and tax kink sizes.[12] Furthermore, Figure A.10 shows the distribution of growth rates (instead of the density of taxpayers) around the tax brackets. There is no discontinuity or change in growth rates around the tax brackets.

The lack of discernible bunching at the kinks suggests that households do not sharply manipulate their reported taxable wealth to stay below tax kinks. This finding appears somewhat surprising: given the low level of wealth tax enforcement and lack of third-party reporting, one might expect stronger apparent responses to discontinuities in tax rates, which are often interpreted as avoidance or evasion responses (Jakobsen et al. (2020)). Of course, the lack of sharp bunching does not mean that there are no behavioral responses to tax rates: the whole distributions may be shifted to the left relative to the counterfactual of lower tax rates.

4.2 Variations in Exemption Thresholds

To complement our analysis of behavioral responses to kinks in the wealth tax schedule, we turn to the first tax bracket, which represents the exemption threshold. Below that threshold, households pay no tax on wealth; above, they pay a marginal tax rate of 0.55% in 2010 (see Panel B of Figure 1).

Panel A of Figure 3 groups households into bins of EUR 10,000 bins of taxable wealth and plots the bin counts around the exemption threshold of 790K for each year in which threshold applied (2006 to 2010).[13] Because households below the exemption threshold do not file wealth tax returns, we do not observe the distribution of wealth below 790K. However, a pointed dome-shaped distribution, as in Panel A, suggests a missing mass just above the exemption threshold and indicates that many taxpayers who have wealth just a bit higher than the threshold level chose to

[12] This is also true for all other years and at all other marginal tax rates threshold as seen in Figures A.5- A.7.

[13] The exemption threshold varied marginally around 790K for the 2006-2010 years: it was 760K in 2006, 770K in 2008, and 790K in 2009 and 2010. To simplify things, we round those values at 790K.

"bunch" below the exemption threshold and do not file a wealth tax return. The distribution of taxpayers is substantially distorted above the exemption threshold in all years and this distortion increases over time.

Because the exemption threshold of 790K was the same for every year between 2006 and 2010, it may be that the drop in mass documented in Panel A is due to other factors affecting this particular segment of the wealth distribution. To better identify the behavioral responses to the exemption threshold, we next exploit the 2011 reform described in Section B that created quasi-experimental variation in this threshold.

Panel B of Figure 3 shows that, consistent with the findings from Figure 2, there is no discontinuity in the wealth distribution around the 1,300K threshold in 2009 and 2010 (when that threshold was associated with only a change in marginal tax rates, but no exemption). In Panel C, we plot the distribution in year 2011, in which the 1,300K threshold becomes the exemption threshold. There is a clear drop in the number of taxpayers just above the 1,300K threshold as compared to 2010, indicative of substantial bunching of households just below the exemption threshold. The distribution of taxpayers further beyond the 1,300K threshold, where declared taxable wealth is less likely to be affected by the 2011 reform, is similar in 2010 and 2011. Panel D shows the distribution of taxpayers around the new 1,300K exemption threshold for several years after the 2011 reform. The distortion in the distribution of taxpayers around the exemption threshold is persistent and grows over time.

In addition to introducing a change in wealth tax rates, the exemption threshold is associated with a change in information disclosure requirements, as taxpayers below the exemption threshold do not report information on the wealth they own to tax authorities. The substantial distortion induced by the exemption threshold combined with the lack of distortions around kinks in marginal tax rates (including at the very same threshold in 2009 and 2010) documented right above suggests that it is not responses to the marginal tax rate change that drive the behavioral responses. Because the missing mass of taxpayers above the 1,300K threshold only appeared when this threshold became associated with a change in reporting requirements due to the 2011 reform, discontinuities in information disclosure seem to play a key role in behavioral responses to the wealth tax.

Although exemption thresholds have been used by previous studies to estimate behavioral responses to changes in marginal tax rates (Seim (2017), Jakobsen et al. (2020), Brülhart et al.

(2021)), distortions around the exemption thresholds potentially simultaneously capture responses to changes in tax rates and changes in reporting requirements.

To better understand how taxpayers respond to shocks in reporting requirements, we next turn to our third source of discontinuities in the wealth tax schedule: the simplification threshold.

4.3 Variations in Reporting Requirements

Our source of variations in reporting requirements comes from the simplified wealth tax returns introduced from 2011 onwards that dramatically reduced the amount of information provided by taxpayers below a given threshold. The simplification threshold varied in those years: it was 3,000K euros in 2011-2012 and 2,570K euros in 2013-2017. In this new form, taxpayers report their total net taxable wealth and do not disclose the composition of their portfolio to the tax authorities. If the amount of information disclosed to the government changed with the implementation of the simplified form, other enforcement mechanisms did not. Before and after 2011, taxable wealth is always self-reported and self-assessed by taxpayers.

Bunching in wealth at the simplification thresholds. In Figure 4, we group households into bins of EUR 10,000 of taxable wealth and plot the bin counts around discontinuities in reporting requirements, depicted by the vertical dotted line. Panel A shows that the distribution of taxpayers around 3,000K was smooth in 2010, but an excess mass appears in 2011 when the threshold becomes associated with low information disclosure. Recall that the reform was only announced in May 2011, which could lead to delayed responses to the change in reporting requirements, as many taxpayers might have already submitted their wealth tax returns prior to the reform. Panel B indeed shows that the effects increases over time with a more distinct distortion in the taxable wealth distribution in 2012. This already suggests the key role played by reporting requirements in behavioral responses to taxes.

Next, we focus on the more salient and permanent shock in reporting requirements with the move of the simplification threshold in 2013 at the 2,570K threshold. Panel C shows that the distribution of taxpayers around 2,570K was smooth in 2012. In 2013, the 2,570K threshold becomes a simplification threshold and a large excess mass appears below the threshold. At the same time, bunching at the previous 3,000K simplification threshold disappears, evidencing that the excess

mass moves with the changes in reporting requirements. Panel D finally shows that bunching at the simplification threshold persists and grows over time and emphasizes the long-term dynamic effects of low information reporting options on reported wealth.

To get a sense of the magnitude of misreporting at the reporting threshold, we implement a standard static bunching approach following Kleven (2016). This methodology is described in details in Appendix C and enables us to quantify the number of missing taxpayers at the simplification threshold (as a fraction of the height of the counterfactual distribution at the kink), and to study its evolution over time. The results reported in Table B.4 show that the excess mass around the 2,570K threshold increases from 46 taxpayers in 2010 (8% of the counterfactual distribution at the kink) to 1,952 (2.7 times the counterfactual) in 2013. Furthermore, the excess mass increased by 60% between 2013 and 2017, emphasizing again the dynamic effects of the simplification reform on reported wealth.

Because there was no excess mass below 2,570K before 2013, when the threshold was associated with a discontinuity in marginal tax rates only, our analysis corroborates that bunching responses after 2013 are driven by changes in reporting requirements. Our findings also suggest that the learning and adjustment costs at the information discontinuity in the context of the wealth tax are low.[14]

Average growth rates around the simplification thresholds. Figure 5 starts by plotting the distribution of growth rates around the simplification thresholds, depicted by vertical black lines, over the period 2006-2017.

Panel A shows that, before the introduction of the simplification threshold, average growth rates by wealth bins were constant in the [2000K,3500K[interval and there is no discontinuity around the (future) simplification thresholds at 2,570K and 3,000K.[15] Panel B shows that, after the introduction of the simplified returns in 2011, there is an immediate distortion in growth rates around the 3,000K simplification threshold. For taxpayers located in the [2000K-3000K[interval, growth rates are decreasing as we get closer to the simplification threshold. For taxpayers with

[14] In the context of low-income entrepreneurs, Aghion et al. (2017) find that entrepreneurs fail to adjust and remain at the old, no longer applicable simplification threshold.

[15] While wealth growth rates tend to be increasing with the level of wealth across broad ranges of wealth (for instance, when comparing households in the top 10% and those in the top 1%), we are here comparing households who are in the same percentile of the wealth distribution (between p99 and p99.1)

wealth in the [3000K,3500K[range, growth rates are constant and similar to those of taxpayers located far below the 3,000K threshold.

Panel C confirms the discontinuity in wealth growth rates in response to the discontinuity of reporting requirements by showing a clear jump in growth rates around the new simplification threshold of 2,570K introduced in 2013 (and until 2017). For the distribution of growth rates around the simplification threshold year by year, see Figure A.12.[16] Growth rates decrease up until the 2,570K threshold, suggesting that households located just below the simplification threshold have the lowest growth rates. Remarkably, the discontinuity in wealth growth rates around the 3,000K threshold that we detected for the year before (2012) disappears entirely in 2013 and subsequent years. There is thus no persistence of responses at the old threshold and the new threshold is immediately salient.The immediate and sharp responses to the implementation and changes of the simplified thresholds suggest that distortions created by the simplification reforms are driven by avoidance rather than real and persistent responses.[17]

Distribution of growth rates around the simplification thresholds. Instead of average growth rates, we can also consider heterogeneity in growth rates at each taxable wealth level. Figure A.13 shows the share of taxpayers by quartiles of wealth growth, where quartiles are defined based on the sample with taxable wealth well above the threshold (above 3,000K). The proportion of taxpayers with low growth rates (in the bottom quartile) increases somewhat right below the threshold and then falls again above the threshold. On the contrary, the share of taxpayers with growth rates in the third or top quartile sharply declines before the threshold. Correspondingly, the share in the second quartile increases before the threshold. Therefore, taxpayers with high growth rates appear to "censor" them as they approach the threshold and instead report growth rates in the second quartile and, to a lesser extent, in the bottom quartile. Figure A.14 shows the share of taxpayers with essentially zero growth (growth rates between 0% and 0.1%). Whether in the cross-section (Panel A) or for cohorts defined in the years 2012-2016, there is a significant spike in the share reporting a zero growth rate right below the threshold.

[16]The Appendix Figure shows the reduction in growth rates of taxpayers below the simplification threshold relative to those above 3,000K to account for the fact that average growth rates differ from year to year.

[17]Figure A.11 reproduces Figure 5 by adding year fixed effects in order to correct for potential mean differences in years when pooling all observations. The results are unchanged.

Summing up. To summarize, we find no bunching at thresholds where only tax rates change (pure tax thresholds), but substantial bunching at information discontinuity threshold (exemption and simplification threshold). Furthermore, we find clear reductions in wealth growth rates below the threshold, even though taxpayers do not systematically report *zero* growth rates. Overall, those facts suggest that information and reporting requirements play a key role in driving behavioral responses to the wealth tax. To better identify the causal impact of lowering reporting requirements on reported taxable wealth and overall tax enforcement, we move to the micro-level analysis of simplification reforms in the next section.

5 Dynamic Responses to Changes in Reporting Requirements

In this section, we exploit the panel dimension of our dataset to study the dynamic effects of information discontinuities. To conduct this analysis, we focus on the simplification rather than exemption thresholds because they represent the cleanest variation in reporting requirements, keeping tax liability unchanged. The main analysis relates to the 2013 simplification threshold at 2,570K introduced in 2013.

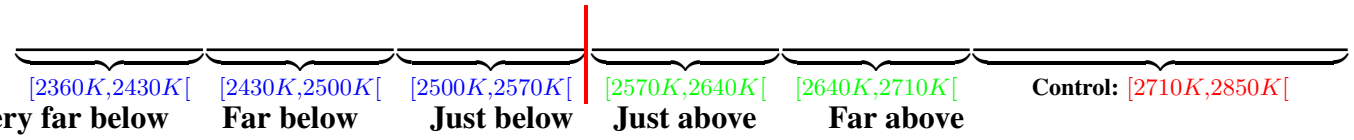
Sample restrictions. We make some necessary additional sample restrictions. First, we keep households that we can follow for at least three consecutive years between 2006 and 2017, i.e., for which we can observe growth rates in at least two years. This reduces the sample by 9%. Second, we drop households who experience a change in family status such as a divorce or marriage, in order to avoid capturing wealth changes due to these life events. This leads us to dropping an additional 10.4% of the initial sample. To limit the noise in our estimation, we finally exclude observations with extreme wealth growth rates (above the 99th or below the first percentile of each annual growth rate distribution, hence, another 2% of the sample). In total, we drop 19.8% of the raw sample.

Table 1 summarizes our sample of analysis for years 2010 and 2012. The samples also show similar patterns for demographics with and without the sample restrictions (top panel). Panel B then shows that applying our restrictions does not substantially change the income composition in our sample of analysis. Finally, the wealth tax payments and wealth tax rates are exactly similar in

the overall and restricted sample (bottom panel).

5.1 Motivation

Groups of taxpayers. We can define groups of taxpayers based on their pre-reform distance to the simplification threshold at 2,570K. These groups are depicted in the diagram below. We select as our control group of taxpayers who are far enough from the 2,570K threshold, while also remaining far enough from the previous simplification threshold at 3,000K, which is taxpayers with wealth between 2,710K and 2,850K in 2012. Figure 5, Panel C, showed no distortions in wealth growth rates for these taxpayers. All households with taxable wealth close to the 2,570K threshold in 2012 are potentially treated by the change in reporting requirements in 2013. Ideally, we would like to capture the heterogeneity in the impact by distance to the threshold. Therefore, we split the treated group with taxable wealth in the [2360K, 2710K[range into five treated groups by bins of 70K euros of taxable wealth. We pick this bin size to allow for sufficiently many treated groups (five), but also not slice the data too thinly and introduce excessive noise.



Growth rate distributions. Wealth is a stock. Therefore, even absent behavioral responses, we would expect it to grow at some rate of return. A "classic" difference-in-difference bunching approach that considers the levels of wealth from year to year may therefore be misleading unless it accounts for some normal rate of return. Our method therefore consists in studying changes in the *distribution of wealth growth rates*. We can then ask how we might expect taxpayers to respond to the simplification reform. Do they simply report zero growth rates? Or do they report just "low enough" growth rates to avoid crossing the threshold? Furthermore, are responses driven by a small number of taxpayers or many taxpayers?

To understand the issues intuitively, Figure A.16 plots the distribution of growth rates in our treatment and control groups, before and after the change in reporting requirements of 2013. Panel A shows that before the reform, all treated and control groups had similar distributions of growth

rates (from 2011 to 2012). Panel B reveals that the distribution of wealth growth rates in the treatment group experienced a substantial change after the change in reporting requirements. For households located just below the simplification threshold in 2012 (red line), a spike in wealth growth rates appears around zero. This is consistent with the intuition that taxpayers located very close to the simplification threshold in 2012 and who want to remain below the simplification threshold need to report a wealth level in 2013 that is almost identical to their wealth level in 2012, i.e., a close to zero wealth growth rate. This spike in the distribution of wealth growth rates around zero is associated with a missing mass of taxpayers with small positive wealth growth rates with values between 1% and 5%.

For treated taxpayers located further below the simplification threshold in 2012 (blue line), the figure also reveals a substantial spike in wealth growth rates compared to the pre-reform year. The spike in wealth growth rate is, however, not centered around zero, but rather around small positive wealth growth rates. This suggests that households further away below the simplification threshold can report small positive wealth growth rates and still manage to remain right below the simplification threshold. This spike in the distribution of wealth growth rates induces a corresponding missing mass in the number of taxpayers with positive wealth growth rates that are between 5% and 10%. Vice-versa, for treated taxpayers located just above the threshold in 2012 (green line), the figure also reveals a spike in the wealth growth rates as compared to the pre-reform year. This spike is less pronounced and centered around small negative wealth growth rates: to report wealth just below the simplification threshold, these taxpayers must report small negative wealth growth rates. This change in taxable wealth induces a corresponding missing mass in the number of taxpayers with zero, or small positive wealth growth rates after the reform.

Figure A.16 further allows us to shed light on the nature of behavioral responses to information disclosure discontinuities. If the simplified tax return lowers enforcement for all taxpayers benefitting from the simplified return, we should either see a uniform downward shift in the distribution of growth rates for all households below the simplification threshold (everyone reports lower wealth growth rates) or a spike at zero growth rates for all those groups (everyone stops updating wealth). Our findings suggest otherwise. Instead, we see that responses to the reform exclusively come from taxpayers who should have crossed the simplification threshold, and misreport their wealth in order to stay just below the simplification threshold.

The different shapes of the growth rate distributions mean that we cannot directly compare across groups, unless we find a proper way to "normalize" these distributions, to which we turn next.

An original dynamic bunching approach. We develop an original dynamic bunching approach that provides a causal effect framework to estimate the effects of the simplification threshold (as in Angrist et al. (1996)). This method allows us to: i) estimate the aggregate growth rate reduction at the group level (an intent-to-treat or ITT effect); ii) estimate the proportion of bunchers, i.e., the share of taxpayers who react to the 2,570K simplification threshold (the compliers); iii) estimate the growth rate reduction among the bunchers (a local average treatment effect or LATE).

We proceed in three steps. First, we will construct "normalized growth rates" around the simplification threshold for treated groups. Second, we will use the control group to estimate an appropriate counterfactual distribution. Third, we will present a causal effect framework based on the comparison of the observed and counterfactual distributions.

5.2 Dynamic Bunching Method

5.2.1 Normalized growth rates

In order to generalize the analysis described in Figure A.16, we introduce the concept of normalized growth rates. For taxpayers affected by the simplification threshold, we define the normalized growth rate as the growth rate in excess of growth rate that would make individuals cross the simplification threshold:

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

If $\tilde{g}_{i,2570}$ is zero, individual i locates exactly at the simplification threshold. When $\tilde{g}_{i,2570}$ is negative, this means that i locates below the 2,570K threshold. For instance, $\tilde{g}_{i,2570} = -0.015$ means that the individual reported a wealth growth rate 1.5 percentage points lower than the growth rate that would have allowed her to locate exactly at the simplification threshold. To generalize our notation, we denote $\tilde{g}_{i,S}(W_{i,t})$ the normalized growth rate defined relative to the threshold S for

individual i with taxable wealth $W_{i,t}$ in year t. We define $f(\tilde{g}_{i,S}(W_{i,t}))$ as the distribution of $\tilde{g}_{i,S}(W_{i,t})$ and $f_{T_j}(\tilde{g}_{i,S}(W_{i,t}))$ as the distribution of $\tilde{g}_{i,S}(W_{i,t})$ for taxpayers belonging to one of our treated group T_j.

Figure A.17 illustrates why the concept of a normalized growth rate allows us to resolve the issues highlighted above in Figure A.16. Panel A depicts the distributions of normalized growth rates in 2013 for all the groups below the threshold. As we saw above, the (raw) growth rate distributions have different means and shapes. However, the normalized growth rate distributions are directly comparable and exhibit clear excess mass just below 0, and missing mass right above zero. Taxpayers with those small positive growth rates would end up just above the simplification threshold in 2013. There is excess mass just below the zero normalized growth rates, and the bunching at the normalized growth rates seems to be decreasing with distance to the threshold. For instance, the group "very far below" seems only barely affected by the threshold. Panel B focuses on the groups above the threshold and exhibits a similar picture. The normalized growth rate distributions are now shifted toward positive values with excess mass exactly at the wealth growth rates that would push these groups below the simplification threshold. However, it is worth noticing that bunching responses around the zero normalized growth rates seems to be larger for groups below the threshold in 2012, than for groups just above. The control groups' normalized growth rate distribution appears unaffected and exhibits no discontinuity.

5.2.2 Counterfactual distribution and placebo threshold

The second step of the dynamic bunching method relies on the use of the control group to derive a counterfactual distribution for each treated group. We therefore construct the difference between the observed growth rate of the control group and the growth rate that would make taxpayers in the control group cross a "placebo" threshold. The placebo threshold needs to be equally distant from the control group as the simplification threshold is for each treated group. Therefore, the control group normalized growth rate differs for each treated group considered. For any treated group $T_j = [a_j, b_j[$, the normalized growth rate of the control group C (taxpayers with wealth in the [2710K,2850K[interval in 2012) is defined as:

$$\tilde{g}_{i,c_j} = \frac{W_{i,t+1} - (2780K \times (2570K/b))}{W_{i,t}} \tag{2}$$

Where c_j is the placebo threshold defined relative to each treated groups T_j for individuals in the control group C. The distance between the placebo threshold and the control group is the same as the difference between the treated group and the simplification threshold in percent terms.

Alternatively, we can instead chose the placebo threshold for the control group such that the distance between that threshold and the control group is the same in level as the difference between the treated and control group. This amounts to using the additive form:

$$\tilde{g}_{i,c_j} = \frac{W_{i,t+1} - (2780K + 2570K - b_j)}{W_{i,t}} \tag{3}$$

For instance, imagine we consider households in the treated group located with wealth in the [2430K,2500K[range in 2012. The distance between the upper bound $b = 2,500K$ of this interval and the simplification threshold is 70K (=2570K-2500K). To pick a placebo threshold for the control group [2710K,2780K[that is at the same distance, we need to chose c_j as 2780K+70K which corresponds exactly to 2780K+2570K-b.

We use the multiplicative form from Equation 2 as our benchmark, but Figure A.15 shows that using the additive or multiplicative approach to choose c_j yield very similar results.

5.2.3 Conceptual Framework

We now provide a causal effect framework to estimate the effects of the simplification threshold (as in Angrist et al. (1996)). Our goal is to estimate the share of taxpayers who react to the 2,570K simplification threshold, which we will call "bunchers." For each treated group Tj (defined by an interval of wealth in 2012), we observe $f_{T_j}(\tilde{g}_{i,2570}(W_{i,t}))$ the distribution of $\tilde{g}_{i,2570}(W_{i,t})$. Our goal is to measure the impact of the 2,570K simplification threshold on the distribution $f()$ of normalized growth rate $\tilde{g}_{i,2570}$ for treated group T_j, in the interval $[a_L, 0]$ that is affected by the simplification threshold:

$$B_j = \int_{a_L}^{0} [\ f_{T_j}(\tilde{g}_{i,2570}) - f_{T_j}^{counterfactual}(\tilde{g}_{i,2570})\ ] d\tilde{g}_{i,2570} \tag{4}$$

The term $f_{T_j}^{counterfactual}(\tilde{g}_{i,2570})$ measures the distribution of the normalized growth rate in the treated group absent the treatment and cannot be observed. The lower bound a_L denotes the beginning of the segment where $f_{T_j}(\tilde{g}_{i,2570}(W_{i,t}))$ is distorted by the 2,570K simplification threshold, and is also unobserved.

We recover B_j by using $f_{T_j}^{counterfactual}(\tilde{g}_{i,2570}) = f_C(\tilde{g}_{i,c_j})$, with c_j the placebo cut-off depending on the treated group T_j. The share of bunchers can be rewritten as:

$$\begin{aligned} B_j &= \int_{a_L}^{0} f_{T_j}(\tilde{g}_{i,2570}) d\tilde{g}_{i,2570} - \int_{a_L}^{0} f_C(\tilde{g}_{i,c_j}) d\tilde{g}_{i,c_j} \\ &= \sum_{a=a_L}^{0} [P_{T_j}(a) - P_C(a)] \end{aligned}$$

where $P_Z(a)$ is the proportion of the group Z population in a given bin a of $\tilde{g}_{i,S}$ and a_L corresponds to the threshold below which $f_C(\tilde{g}_{i,c_j})$ and $f_{T_j}(\tilde{g}_{i,S})$ begin to diverge.

Figure 7 shows the application of our dynamic bunching framework for the group just below the threshold in 2012. The distribution of normalized growth rate is plotted in blue for the treated group and in red for the control group, and the difference between the two distributions identifies B_j. Using our methodology, we can set $a_L = -.045$.

Bunching segment Using our conceptual framework, we then proceed in three successive steps. First we compute the upper bound a_U such as bunching mass (blue area in Figure 7) equal missing mass (green area in Figure 7):

$$\sum_{a=a_L}^{0} [P(a|T_j) - P(a|C)] = -\sum_{a=0}^{a_U} [P(a|T_j) - P(a|C)] \tag{5}$$

As showed in Figure 7, this methodology leads us to set $a_U = 0.1$ and our bunching segment is therefore [-0.045, 0.1].

Growth rate reduction in the treated group Next, we compute the average growth rate reduction at the group level $\Delta E_j(g)$:

$$\begin{aligned}\Delta E_j(g) &= E(g|T_j) - E(g|C) \\ &= \sum_{a=a_L}^{a_U} [P(a|T_j) \times g(a|T_j) - P(a|C) \times g(a|C)]\end{aligned}$$

Note that as $\Delta E_j(g)$ measures the average response in the treatment group T_j, it should be comparable to the ITT we estimated in our difference-in-differences analysis.

Growth rate reduction amongst bunchers In the last step, we compute the growth rate reduction among the bunchers $\Delta E_j(g)_B$. That is, we scale our estimated average effect $\Delta E_j(g)$ by our estimated share of bunchers:

$$\Delta E_j(g)_B = \Delta E_j(g)/B_j \tag{6}$$

The estimated growth rate reduction among the bunchers can thus be interpreted as the local average treatment effect (LATE) of the simplification threshold. Standard errors are obtained by a bootstrap procedure with 600 replications.

Identifying assumption and validation. The identifying assumption needed for the control group normalized growth rate distribution to be a valid counterfactual for the treatment groups (as defined pre-reform in 2012) is that these groups would have had the same distributions of normalized growth rates post-reform (in 2013 and subsequent years), absent the reform. We explore the plausibility of this assumption with various tests. First, we define our treated and control groups in 2011 instead of 2012, and show in Figure 6 that they have the same distribution of normalized growth rate in 2012. Second, we verify in Figure A.18 that our treated and control groups (defined in 2012) have the same distribution of growth rate in 2012 and before. Finally, our control group is not affected by simplification threshold around 2570K in 2013, as already showed in A.17, Panel B.

5.3 Results

We now present our estimates using this harmonized methodology in Figure 8. Each panel displays our treatment (red lines) and control (blue lines) series, for different wealth bins within the treated group. In each panel, we report our three key empirical moments of interest: the share of bunchers, the average growth rate response of bunchers, and the average growth rate response in the bunching segment.

Panel A starts by showing that for the group just below the 2,570K threshold in 2012, 14.2% (se=0.07) of taxpayers reacted to the simplification reform. Those bunchers reduced their weath growth rate by 3.2 percentage points between 2012 and 2013. Figure 8, Panel B shows that for taxpayers in the [2430K-2500K[bracket in 2012, the compliance rate was 9.9% (se=0.09) and bunchers reduced their weath growth rate by 2.9 percentage points between 2012 and 2013. Figure 8, Panel C shows that for taxpayers located just above 2,570K in 2012, only 3.7% (se=0.04) of taxpayers reacted to the simplification threshold but the wealth growth rate reduction for those bunchers was of 4.7 percentage points. Finally, Panel D shows that taxpayers located in the [2640K,2710K[bracket also responded to the change in reporting requirements. In this group, the compliance rate is only 1.5%(se=0.03) but the reduction of wealth growth rates among compliers is substantial and around 2.7 percentage points.

Overall, Figure 8 shows that lowering reporting requirements substantially distorted wealth growth rates in a broad segment of the wealth distribution – including for taxpayers located further below or just above the 2,570K threshold in 2012. It also shows that the ITT effects that would be estimated through the lens of a standard difference-in-difference bunching model are actually driven by a small share of taxpayers who significantly reduce their wealth growth rates in order to benefit from low information requirements when filling for the wealth tax. The share of compliers decreases as we move away from the simplification threshold.

Our findings indicate that the proportion of compliers in the group located just above the wealth threshold in 2012, which stands at 3.7%, is significantly lower than for those located below the threshold in the same year. Taxpayers above the threshold in 2012 must report a decrease in their net worth to qualify for the simplified reporting regime, whereas those below the threshold only need to slow-down or freeze their wealth growth rate. The act of reducing the reported wealth could

raise suspicions from the administration and make it more likely to receive additional scrutiny, which might explain why responses are lower among taxpayers who have already crossed the threshold of 2,570K in 2012.

We compare our methodology to a standard difference-in-difference approach in Section 5.4.

Persistence. How does a given taxpayer adjust to the simplification threshold over time? Figure 9 tracks the same taxpayers over time. In Panel A, left figure, we follow the cohort of taxpayers who are in the Just below group in 2012 and plot their normalized growth rate distributions in the subsequent four years (2013-2016). In Panel B, we repeat this with the cohort in the Just below group in 2014; in panel C in 2016. The first two panels show that the bunching in normalized growth rates is highly persistent within taxpayer over time. Although it is strongest in the first year (e.g., 2013 for the 2012 cohort and 2015 for the 2014 cohort) it remains sharp and large even after four years. The right figure in Panel A considers taxpayers at a given level of taxable wealth in 2012 and plots their reduction in growth rates for taxpayers below the threshold relative to the growth rate of taxpayers above 3,000K for the subsequent four years. The normalization by the growth rate of taxpayers further above the threshold is to account for the different growth rates of the economy in different years. Panel B repeats this analysis for the cohort defined in 2014; Panel C for the cohort defined in 2016. There is a persistently lower growth rate for taxpayers below the threshold that is attenuated over time. Together these results suggest a high persistence in the reduction of growth rates for taxpayers below the simplification threshold. Taxpayers persistently report lower wealth and pay less taxes than they would have absent the simplification threshold.

Figure 9 suggests that, although bunching is highly persistent within taxpayer over time, some taxpayers do end up crossing the threshold. Panel A of Figure 10 shows the share of taxpayers in the treatment and control group (as defined based on their pre-reform taxable wealth in 2012) who cross the simplification threshold in 2014 as a function of their normalized growth rate from 2012 to 2013. For the control group, this share is defined relative to the placebo threshold. In line with our findings of substantial and persistent misreporting behavior around the 2,570K threshold, the probability that bunchers end up above the 2,570K threshold in 2014 (one year after the reform) is 32% in the treated group against almost 60% in the control group. Panel B shows that this effect persists over time. In 2016, three years after the reform, the probability that bunchers end up above

the 2,570K threshold is 43% in the treated group against more than 60% in the control group.

Robustness checks. We repeat this dynamic analysis for other cohorts, namely those defined in 2013 and 2016. as shown in Figure A.20 and Figure A.21. The results look similar as our benchmark 2012 cohort in the main text. For both 2013 and 2016 cohort, we find large responses for individuals located just below, and far below the threshold. The estimated average treatment effect (expressed in relative of the control group counterfactual growth rate) is stable across cohorts, but shows an increasing pattern. For the group of taxpayers just below the threshold, this effect was 20% for the 2012 cohort, 19% for the 2013 cohort, and increases to 40% for the 2016 cohort. The share of bunchers is also noticeably larger for cohorts defined in 2013 and 2016, compared to our benchmark defined in 2012. For instance, 8.5% of taxpayers far below the threshold in 2012 react to the simplification threshold, but this number increases to 13.5% for the cohort defined one year later, in 2013. For taxpayers just below the threshold, the share of bunchers increases from 15% for the 2012 cohort, to 24% for the 2016 cohort.

As an additional test of robustness, we apply our dynamic bunching analysis to the introduction of a simplified return for taxpayers above the 3,000K threshold in 2011 and 2012. We define treatment and control groups following the same methodology than before except that we focus on 3,000K instead of 2,570K as our information discontinuity. Results presented in Figure A.22 and Figure A.23 show that a significant response to the 3,000K simplification return appears in 2012. The reduction in bunchers' wealth growth rates is 4.8 percentage points for taxpayers located just below the 3,000K threshold in 2011, and 3.3 percentage points for taxpayers located just above the same year. Those estimated responses are remarkably close to our baseline estimates while focusing on a different simplification threshold, in a different period, which proves our estimates capture behavioral responses to low information discontinuities rather than responses to other potentially unobserved discontinuities that would be associated with the 2,570K threshold after 2013.

5.4 Difference-in-Differences strategy

We now present results from a simple difference-in-differences strategy in which we track taxpayers' wealth growth rates in control versus treated groups before and after the change in reporting requirements. This allows us to compare and contrast the results from a difference-in-difference

approach and our dynamic bunching method. Furthermore, by tracking taxpayers over several years, we can study persistent responses to the lower reporting requirements. Formally, we estimate the model:

$$g_{i,t} = \frac{W_{i,t} - W_{i,t-1}}{W_{i,t}} = \sum_{j} \sum_{\substack{k=2008 \\ k \neq 2012}}^{2017} \beta_{jk} \cdot \mathbb{1}\{i \in T_j\} \times \mathbb{1}\{t = k\} + \alpha_i + \lambda_t + \varepsilon_{i,t} \tag{7}$$

where α_i is an individual fixed effect, λ_t is a year fixed effect, $\mathbb{1}\{i \in T_j\}$ is a dummy equal to one if the individual belongs to the treated group T_j and $\mathbb{1}\{t = k\}$ is a dummy equal to one if year is year k. We estimate the equation using OLS and cluster standard errors at the individual level. We set $\beta_{j,2012} = 0$ and $\lambda_{2012} = 0$ such that all estimates can be interpreted as the difference in wealth growth rates between treated and control taxpayers in year k relative to 2012. The sequence of estimates β_{jk} captures the differential evolution of wealth growth rates for households in the treated group j compared to the control group over time. They represent an intent to treat (ITT) effect of lowering information requirements because they capture the responses of all taxpayers in the treatment group, regardless of whether they effectively react to the reform.

Results and comparison to the dynamic bunching method. We report our estimates for all treated groups in Table 2 and plot the estimated effects for the groups closest to the threshold in Figure 11, distinguishing between treated taxpayers located just below the threshold in 2012 (panel A), and those located just above (panel B). The growth rates follow the same evolution in each of the treated groups and the control group for the four years preceding the policy change. This lends support to our identifying assumption that households located far above the 2,570K threshold provide a credible counterfactual for the evolution of wealth growth rate of households located closer to the threshold. The figure shows significant and persistent reductions in growth rates or treated taxpayers located just below the 2,570K threshold in 2012 equal to 0.6-0.8 percentage points in each of the four years following the 2013 reform. This magnitude is equivalent to 25-30% of the control group growth rate. For households located just above the 2,570K threshold in 2012, we find a much lower and non statistically significant effect. This suggests that most of responses to the change in reporting requirements come from behavioral responses of households located just below the new simplification threshold.

The average growth rate reduction in the bunching segment from our dynamic bunching analysis is directly comparable to the average ITT effect from this difference-in-differences analysis. Table 3 shows that the estimates of the ITT effects are consistent between the two approaches but the standard errors are however four times smaller when using the dynamic bunching approach. This is because this methodology allows us to focus on differential growth rates in the bunching segment (defined in terms of normalized growth rates), therefore substantially reducing the noise in our estimation. This is especially true for groups that are further below or just above the 2,570K threshold in 2012, where the share of compliers is low.

6 Mechanisms and Discussion

In this section, we study the mechanisms through which taxpayers substantially and persistently reduce their growth rates following the lowering of reporting requirements in the wealth tax.

6.1 Pre-Reform Differences Between Treated and Control Groups

We first seek to understand if treated taxpayers differ from other taxpayers in terms of assets, occupation, and income composition. Any pre-reform systematic differences between those two groups could point to specific mechanism that drive the overall response to the lower reporting requirements in 2013. We find, however, no significant differences between treated and control groups in terms of wealth composition, occupation, income composition, or taxes.

First, in Figure A.24, we plot the 2010 share of housing wealth (Panel A), financial assets (Panel B) and liabilities (Panel C) in taxpayers' total taxable wealth, for the treated and control group, by bins of normalized growth rates. Taxpayers with negative normalized growth rates (below the vertical red line) are those who remain below the simplification threshold (or the placebo threshold) in 2013. The figure shows that before the reform, treated taxpayers had similar wealth composition than taxpayers in the control group at any normalized growth level. This means that responses to the change in reporting requirements cannot be predicted by pre-existing differences in taxable wealth composition within the treatment group.

One major advantage of our data is that we have detailed longitudinal information on taxpayers' labor and capital income, other tax liabilities, and occupation. We repeat the same analysis

as in Figure A.24, focusing on differences in occupations (Figure A.25) and income composition (Figure A.26). We find that before the reform, treated taxpayers had similar occupations, received the same type of income, and claimed similar levels of tax credits, compared to comparable taxpayers in the control group. We show in Figure A.27 that this result holds when repeating the same analysis for the treated group around the 3,000K simplification threshold of 2010-2011.

6.2 Post-reform Differences Between Treated and Control Groups

6.2.1 Are responses to low reporting requirements associated with lower income after the reform?

A key benefit of the link between the wealth tax data and income tax returns is that we can investigate whether the effective change in reported taxable wealth following the 2013 reform goes hand in hand with a change in labor and capital income. If the lower reported taxable wealth is driven by real effects, we would expect to see a corresponding fall in capital income and/or labor income (through savings). However, Figure 12, shows that this is not the case. The figure shows the evolution between 2010 and 2017 of different types of incomes and tax rates for the subsample of the control group and the treated group "Just Below" (as defined in 2012) who have a normalized growth rate just below zero (-0.045), i.e., who are in the "bunching" area as defined by normalized growth rates. As before, we define bunchers as taxpayers in the treated group with normalized growth rates between -0.045 and 0, in line with our definition of the bunching segment. Taxable income and the shares of financial income, real estate income, and self-employed income all evolved similarly for these two groups, before and after the change in reporting requirements. Thus, while taxpayers who respond to the reporting requirements significantly reduce their reported taxable wealth, we do not see any corresponding change in their capital and labor incomes, suggesting that behavioral responses to low reporting requirements capture avoidance or misreporting rather than real responses. Furthermore, Panels E and F show that there is no difference in the effective tax rates paid by these groups, either before or after tax credits.

6.2.2 Are responses to low reporting requirements driven by misreporting of specific assets?

We then try to identify the categories of taxable wealth which are adjusted by bunchers (who respond to the simplification threshold, defined as taxpayers in the treated group with normalized growth rates between -0.045 and 0, in line with our definition of the bunching segment) *after* the change in reporting requirements by studying the portfolio compositions of different groups after the implementation of the simplified tax returns.

The main challenge is that taxpayers below the simplification threshold after 2013 do not report detailed asset compositions. Our strategy is therefore to focus on bunchers who cross the simplification threshold at some point during the 2014 to 2017 period (as highlighted in Figure 10). To understand what is driving bunchers out of the simplified regime, we then decompose wealth growth rate by assets type for the group of bunchers that cross the threshold one year after the reform and for the control group taxpayers who cross the threshold. In Figure 13, we show that conditional on crossing the threshold, there are large differences between bunchers and other taxpayers in terms of financial assets growth after the reform. Bunchers experienced a 3.5 percentage point higher growth rate in their financial assets between 2010 and 2014, compared to their counterpart in the control group. In contrast, those in the treated group who did not react to the simplification reform experienced the exact same growth in terms of financial assets compared to taxpayers in the control group with similar normalized growth rates in 2013. On the contrary, we find similar growth rates in the treated and control groups, for taxpayers inside and outside of the bunching segment. The results are similar when looking at bunchers who cross the threshold in 2016 (Figure A.28). Bunchers experienced a 2.5 percentage point higher growth rate in their financial assets between 2010 and 2016, compared to their counterpart in the control group.

This analysis highlights that bunchers end up crossing the threshold after they experience large positive shocks to their financial assets. One way to interpret this finding is that shocks in financial assets are hard to hide and therefore force bunchers into filing the detailed wealth tax return again.

6.3 Discussion

Summary of key behaviors and model. What can we learn about the underlying reasons and mechanisms for taxpayers' behaviors from the previous analyses? The findings to inform a poten-

tial model of taxpayer behavior are as follows:

1. Relative to taxpayers above the simplification thresholds, growth rates are systematically lower below the simplification threshold.

2. There is sharp bunching of taxpayers at the simplification threshold.

3. Several groups of taxpayers below the threshold respond to it, not only those directly below, even though responses are strongest for groups closer to the threshold.

4. Responses to the simplification threshold are persistent, with taxpayers attempting to remain below the threshold for multiple years, as long as possible and being "pushed out" of the simplified regime once significant financial asset shocks occur.

5. There is no discernible response at pure tax kinks.

The second finding is strongly indicative of reporting and avoidance responses rather than real savings responses. This is because the true value of taxable wealth is not easily controllable by taxpayers since it depends on asset prices. This conclusion is bolstered by the finding that there is no corresponding change in labor or capital income that could justify changes in taxable wealth. In the Appendix, we suggest a simple model to rationalize these findings. Taxpayers value being in the simplified regime and misreport their wealth in order to stay below the simplification threshold. Misreporting is costly and the cost is increasing in the amount of misreporting and decreasing in the reported growth rate from year to year. The latter assumption explains why forward-looking taxpayers further below the threshold will report lower wealth and growth rates as well, to facilitate anticipated misreporting in future years. The elasticity of reporting is small enough to not generate discernible bunching at pure tax kinks. However, the value of the simplified regime is large enough that the notch generated by the simplification threshold leads to substantial bunching as well as anticipatory responses for groups further below the threshold.

Why do taxpayers want to remain in the simplified regime? There are three possible reasons why taxpayers may want to remain in the simplified regime and there may be heterogeneity in the extent to which either of them applies to a given taxpayer. First, taxpayers may value the

lower hassle cost of reporting taxes with a simplified return. Second, taxpayers may be averse to reporting information to the government, out of privacy concerns. Finally, it may be easier to misreport wealth in the simplified reporting regime. When taxpayers only need to report total wealth, instead of detailed a breakdown, they may feel that it is easier to hide specific assets or report incorrect amounts.

Although each of these channels may play some role, it is unlikely that there is a big hassle cost difference for wealthy taxpayers between the detailed and the simplified tax form. The tax administration requires that taxpayers keep records in case of audits, so the information needs to be recorded and stored regardless of the type of form filled out. Furthermore, it is likely that many taxpayers use professional help for accounting and tax purposes. Furthermore, it is also not clear to what extent privacy concerns are relevant because the government already has access to a lot of information related to the value of real estate (through property taxes), bank accounts, and other sources of capital income on the income tax side. Although this information does not currently appear to be used explicitly for the wealth tax administration, taxpayers should be aware that most of it is already in the hands of the tax administration. Therefore, the ease of misreporting may be the most important reason why taxpayers value the simplified regime. In fact, if the simplified reporting reduced the burden of filing wealth taxes or the privacy concern associated with it, we might expect that some taxpayers who would otherwise have remained below the eligibility threshold are now enticed to cross it. However, the data does not support this view, as we show next.

Are more people willing to cross the wealth tax eligibility threshold? In Appendix D, we quantify the number of missing taxpayers around the exemption threshold. Our baseline methodology exploits Pareto parameters computed in the unaffected segment of the wealth distribution, that we then use to extrapolate the distribution of taxpayers around the exemption threshold.[18] Results reported in Table B.5 shows large misreporting around the exemption threshold, both pre-2011 when the exemption threshold was around 790K, and after 2011 when the exemption threshold was moved to 1,300K. Our results show that the share of missing taxpayers around the exemption threshold post=2011 is increasing, as behaviors slowly adjust to the newly implemented simpli-

[18] Our identifying assumption when conducting this analysis is that Pareto parameters should be constant over the [1,300K-4,000K] interval. Fortunately, data on pre-reform distributions allows us to gauge the plausibility of this assumption. Figure A.30 shows that this assumption is validated in the data.

fication threshold. In 2017, we estimate that roughly 30% of taxpayers are missing around the exemption threshold. This number is close to the 37% of missing taxpayers in 2010, before any simplified return was implemented. This suggests that allowing taxpayers to fill a simple tax return did not induce more people to enter the wealth tax reporting.

Summing up. The reason why people value the simplified regime relates to the normative question of whether it should be extended or eliminated. Clearly, the threshold itself is generating a behavioral effect and distortion, so we may ask whether it should be expanded to everyone (or more taxpayers) or rather eliminated altogether. Based on the preceding arguments, it is likely that taxpayers value the ease of misreporting and that the loss of information leads to persistently higher under-reporting of wealth. It also does not appear that the simplified regime enticed more taxpayers to file a wealth tax return in the first place.

7 Conclusion

In the debate on the desirability of wealth taxes, several papers have studied the experience of various countries with wealth taxes. Estimated elasticities, however, vary tremendously. We find essentially zero behavioral responses to changes in the wealth tax rates alone (kinks) in France, but substantial responses to information notches introduced by the exemption and simplification thresholds. Instead, most paper focus on exemption thresholds. In Sweden, Seim (2017) finds substantial behavioral responses to the exemption threshold in the context of wealth tax in Sweden, that translate into elasticities between 0.1 and 0.3. In Denmark, Jakobsen et al. (2020) find substantial responses to the exemption threshold, with long-run elasticities of taxable wealth around 1. In Colombia, where enforcement is lower than in Sweden, Londoño-Vélez and Avila-Mahecha (2022) find large behavioral responses to the wealth tax, in particular at the salient exemption notch. Like in France, taxpayers in Colombia face additional reporting requirements when they become subject to the wealth tax.[19] They estimate an elasticity with respect to the net-of-tax rate between 0.3 and 4.4 at the exemption notch. Our results show that behavioral responses to the

[19]More specifically, households below the exemption cut-off must declare their assets in a very aggregate way. If they are above the exemption cut-off, they file an additional wealth tax statement that requires to disclose detailed information on their taxable wealth to the government.

exemption notch are likely to capture responses to changes in reporting requirements rather than to changes in tax rates. In our context, behavioral responses to the wealth tax only arise when discontinuities in marginal tax rates are associated with changes in reporting requirements, corroborating that information avoidance is the main channel explaining responses to the wealth tax.

Our results imply that poor tax design choices can have immediate implications for tax enforcement, and that these effects may be large and persistent. Taxpayers in lower reporting environments (such as those below the simplification threshold in our setting) persistently under-report their wealth, which in turn can lead to deterioration in the information and, hence, enforcement capacities of the tax authorities. A one-off collection of information may not be enough and it may take a long time to recoup the lost enforcement capacities.

In future research it would be valuable to study other design choices such as pre-populated returns, third-party reporting, and taxing expatriates. All these design choices have the potential to reduce tax base elasticities but they all have costs. A full cost-benefit analysis of these different options constitutes a fruitful avenue for future research.

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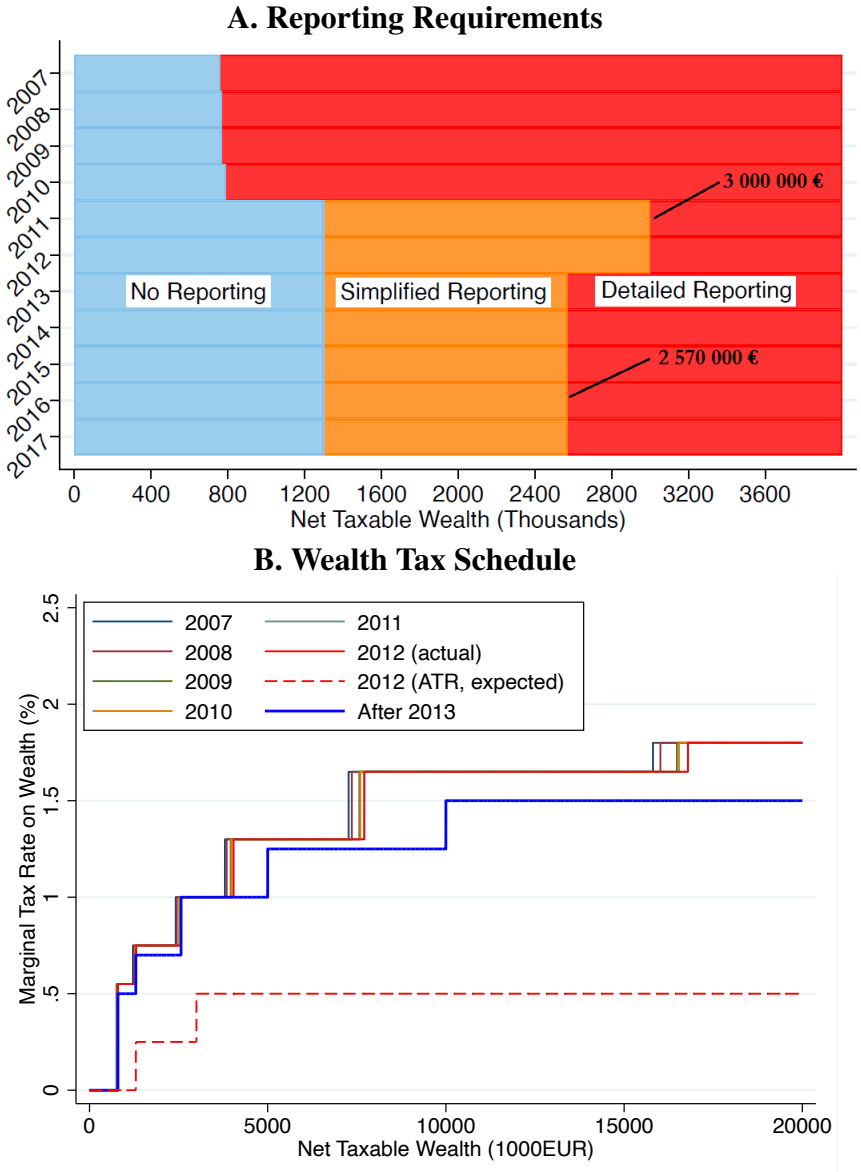
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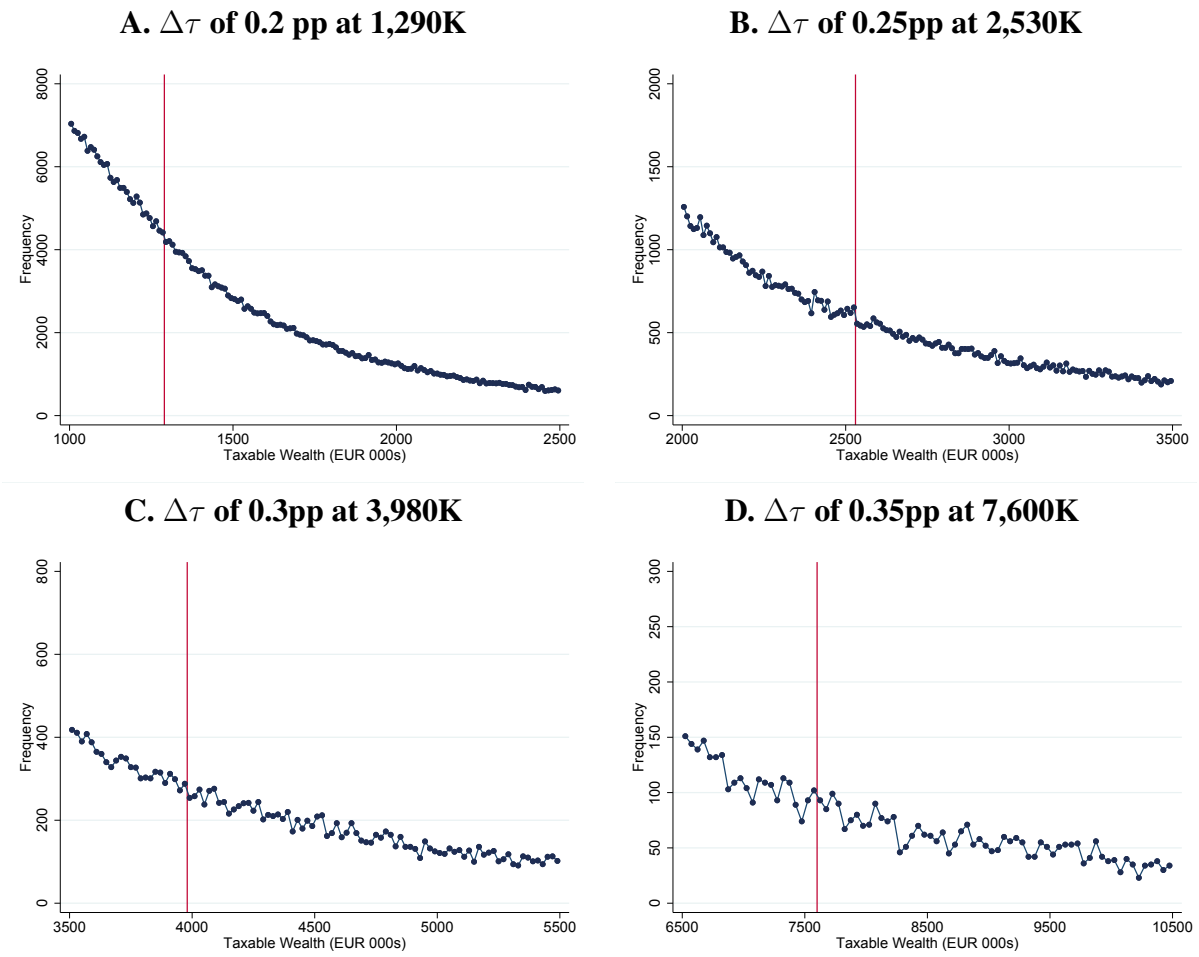
8 Figures and Tables

Figure 1: **Wealth Tax Schedule and Reporting Requirements in France, 2007-2017**



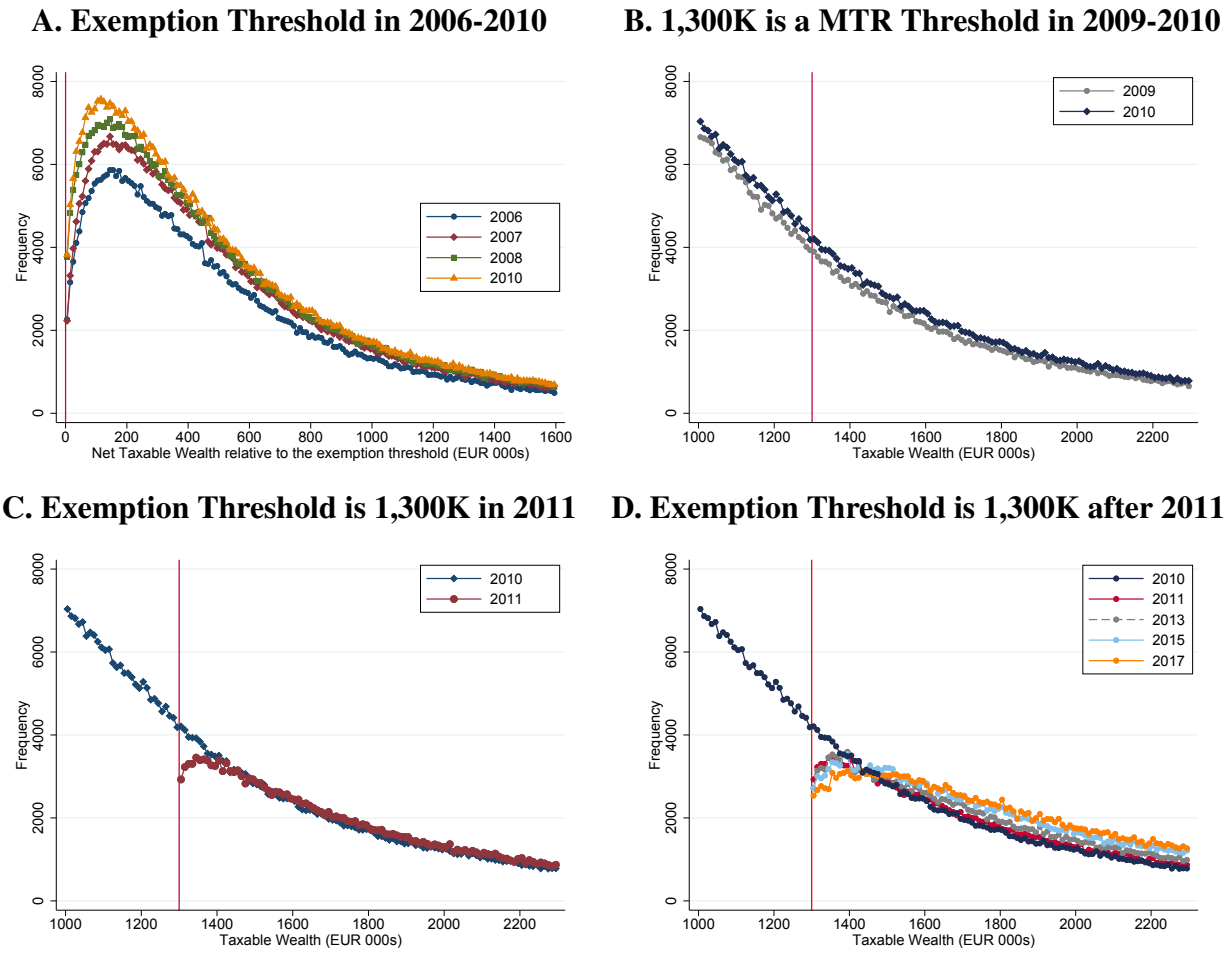
Notes: Panel A summarizes the reporting requirements for wealth taxpayers by level of reported net taxable wealth over the period 2007-2017. Panel B shows the wealth tax schedule between 2007 and 2017. The dashed line indicates the expected tax schedule in 2012, which was changed at the last minute and, therefore, never implemented (see Section 3.2).

Figure 2: **Absence of Bunching at Kinks in the Tax Schedule (Marginal Tax Rate Changes)**



Notes: This figure shows the distribution of taxpayers by net taxable wealth around the second (Panel A), third (Panel B), fourth (Panel C) and fifth (Panel D) wealth tax bracket threshold in year 2010. For the full tax schedule, see Figure 1 and Table B.2. In each figure, we group householdsd into bins of 10,000 net taxable wealth for Panel A and B, 20,000 in Panel C and 50,000 in Panel D, and plot the bins counts around each kinks, depicted by the vertical red line. We plot the distributions of taxable wealth in all other years and at all other marginal tax rates threshold in Figure A.5, A.6 and A.7.

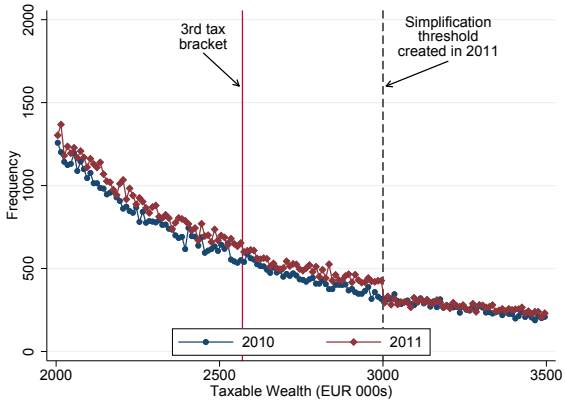
Figure 3: **Bunching at the Exemption Thresholds**



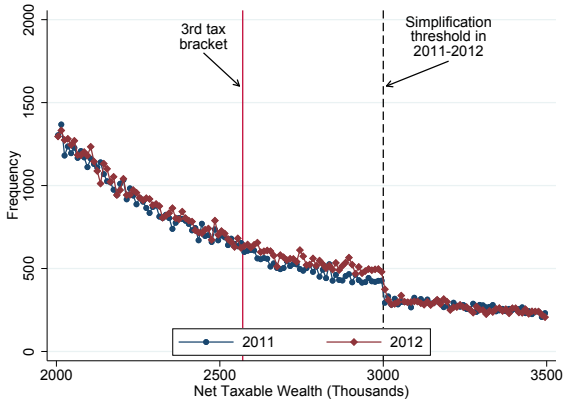
Notes: Panel A shows the distribution of taxpayers around the exemption threshold in 2006-2010, years for which the exemption threshold varied only a little: it was 760K in 2006, 770K in 2008, and 790K in 2009 and 2010. Panel B shows the distribution of taxpayers around 1,300K, which in 2009 and 2010 represented a pure tax kink (discontinuity in marginal tax rates) as explored in Figure 2. Panel C layers on top of the distribution for 2010 from Panel B the distribution of taxpayers for the year 2011 when the 1,300K threshold becomes the exemption threshold. Therefore, this threshold becomes associated both with a change in wealth tax rates and a change in reporting requirements. Panel D shows the distribution of taxpayers around the new exemption threshold after 2011.

Figure 4: **Bunching at Simplification Thresholds**

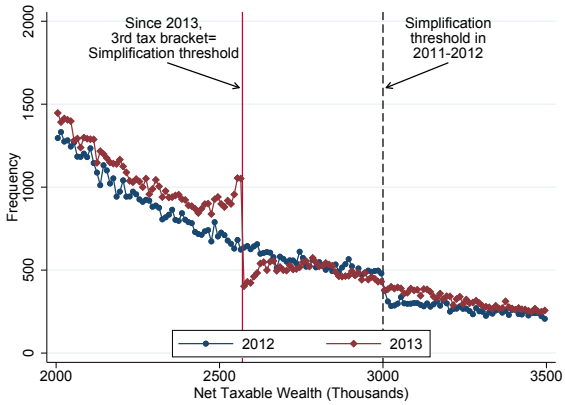
A. Simplification Threshold is 3,000K in 2011



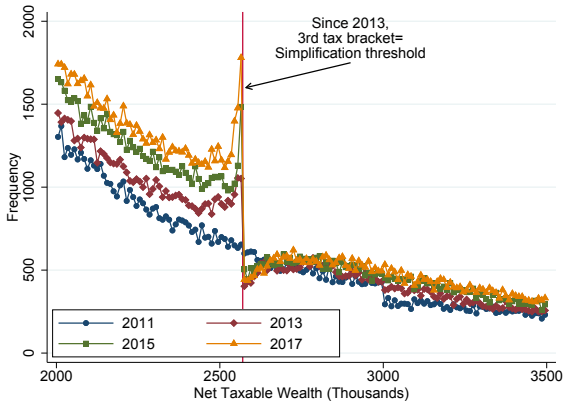
B. Simplification Threshold is 3,000K in 2012



C. Simplification Threshold is 2,570K in 2013



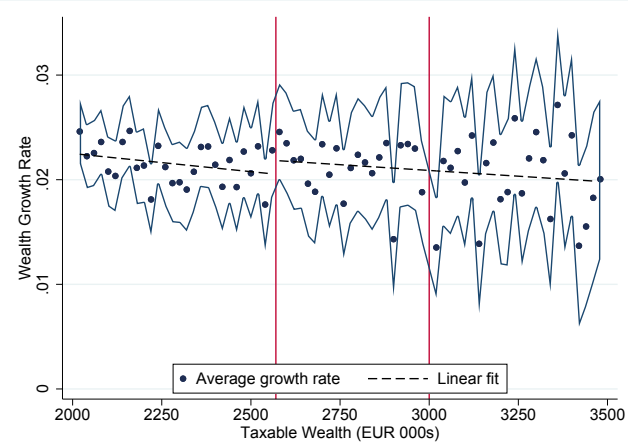
D. Simplification Threshold is 2,570K for 2013-2017



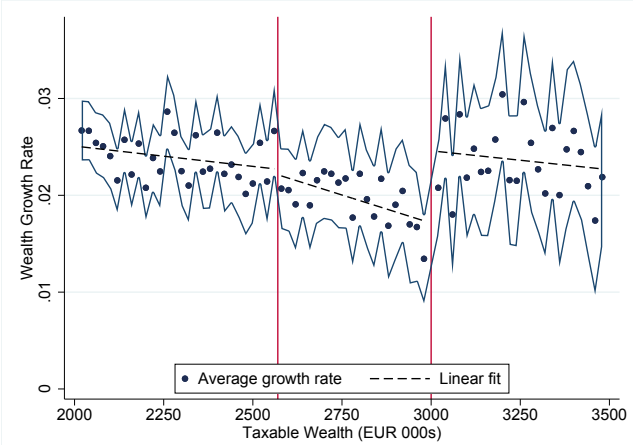
Notes: This figure shows the distribution of taxpayers by net taxable wealth around the simplification threshold (dashed vertical line) implemented for taxpayers with net taxable wealth below 3,000K in 2011 and that was moved at 2,570K in 2013. We also plot the threshold for the third tax bracket, which was 2,520K in 2009, 2,530K in 2010, and 2,570K in 2013 (solid vertical line). The discontinuity in MTR associated with passing the third bracket threshold was stable: 0.25 percentage points before 2013, and 0.30 percentage points after 2013. From 2007 to 2012, the third bracket MTR threshold was associated with a change in marginal tax rate (a tax kink) but not with a change in reporting requirements. In 2013, the third bracket and the simplification threshold coincide at 2,570K. In each figure, we group households into bins of 10,000 euros and plot the bin counts around the simplification threshold. Panel A shows the distribution of taxpayers in 2011, when the simplification threshold is newly created at 3,000K, as compared to the distribution in 2010; Panel B plots the distribution of taxpayers in 2011 and 2012, after the simplification threshold at 3,000K has been in place for one year already. Panel C plots the distribution in 2013 when the simplification threshold is moved to 2,570K and starts to coincide with the third bracket and compares it to the distribution in 2012. Panel D plots the distribution of taxpayers for 2013, 2015, and 2017, years for which the simplification threshold remained stable at 2,570K and compares it to the distribution in 2011.

Figure 5: **Behavioral Responses to Simplification Thresholds: Wealth Growth Rates**

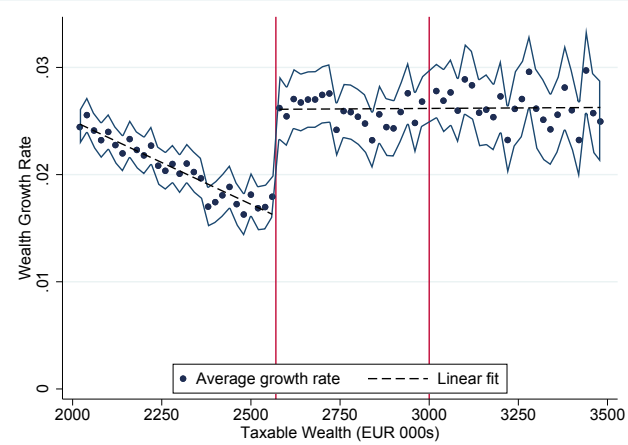
A. No Simplification Threshold in 2006-2010



B. Simplification Threshold is 3,000K in 2011-2012

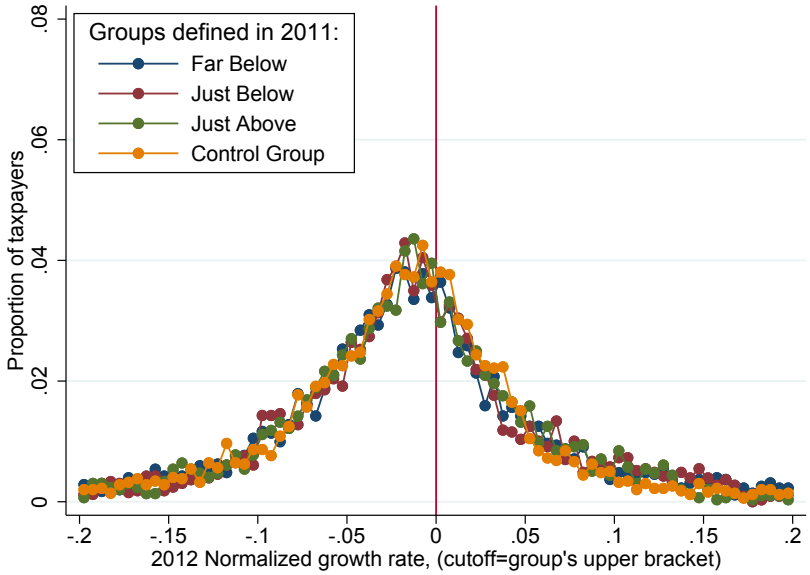


C. Simplification threshold is 2,570K in 2013-2017



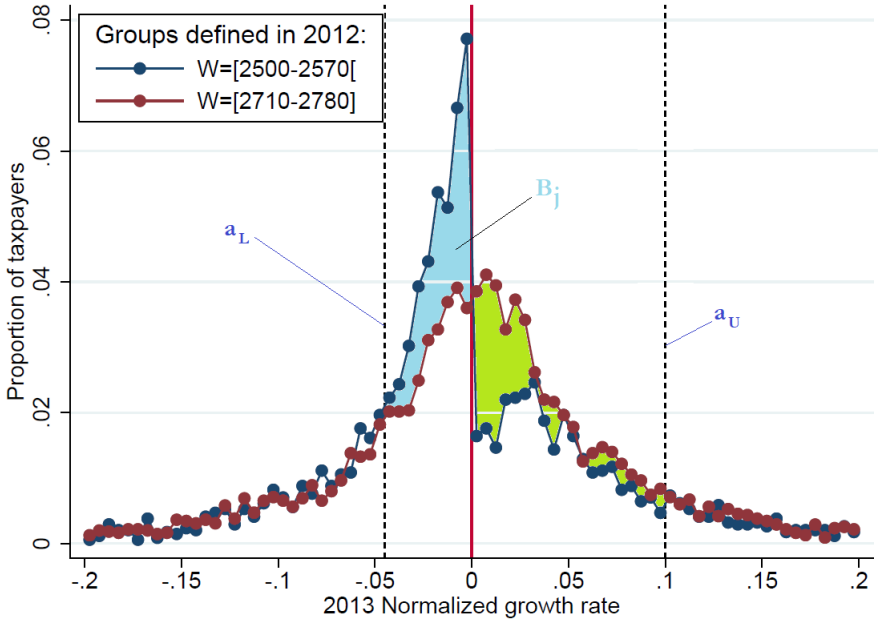
Notes: This figure shows the distribution of yearly wealth growth rates by wealth bins, pooled for different periods, around the simplification threshold (vertical solid line). In each figure, we group household into bins of 20,000 reported taxable wealth. We plot the average wealth growth rate by bin and fit linear models (one below and one above the cut-off), depicted by the dashed black lines. Panel A pools all observations for the period before the simplified reporting was introduced (2006-2010), Panel B pools all observations for the period during which the simplification threshold was at 3,000K (2011-2012) and Panel C pools all years for the period during which the simplification threshold was 2,750K (2013-2017). The shaded areas depict 95% confidence intervals.

Figure 6: **Distribution of normalized growth rates across groups before the simplified regime (2011): Validation of the identification assumption**



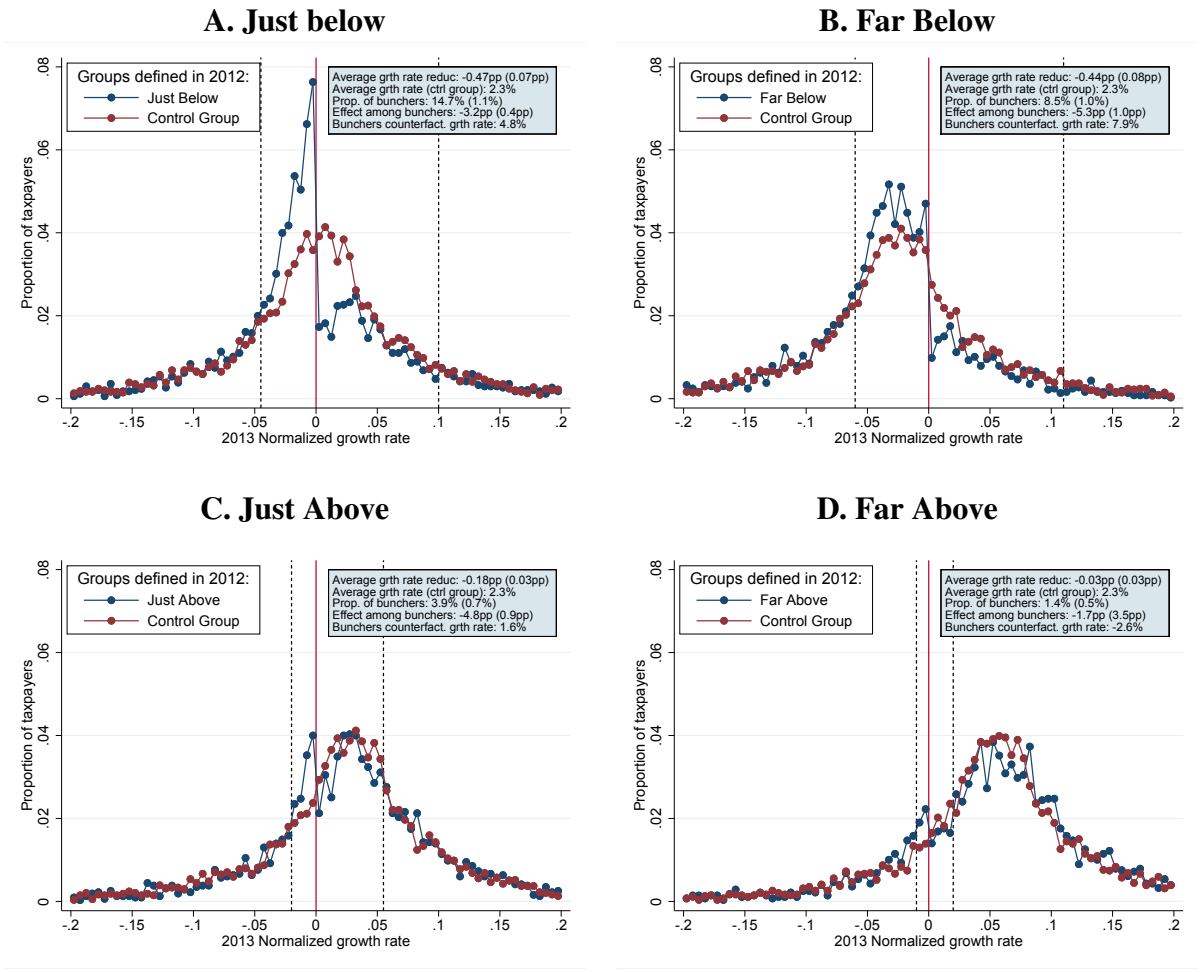
Notes: This figure investigates whether the distribution of normalized growth rates in the control group (taxpayers located in the interval [2710K,2850K[in 2012) is comparable to the distribution of normalized growth rates for other taxpayers ("Far below," "Just below," "Just above"). We define our control and treated group by level of wealth in 2011, and plot their 2012 normalized growth rates as explained in Sections 5.1 and 5.2.1.

Figure 7: **Dynamic Bunching Estimator**



Notes: This Figure describes our dynamic bunching methodology and estimator, as explained in Section 5.2.

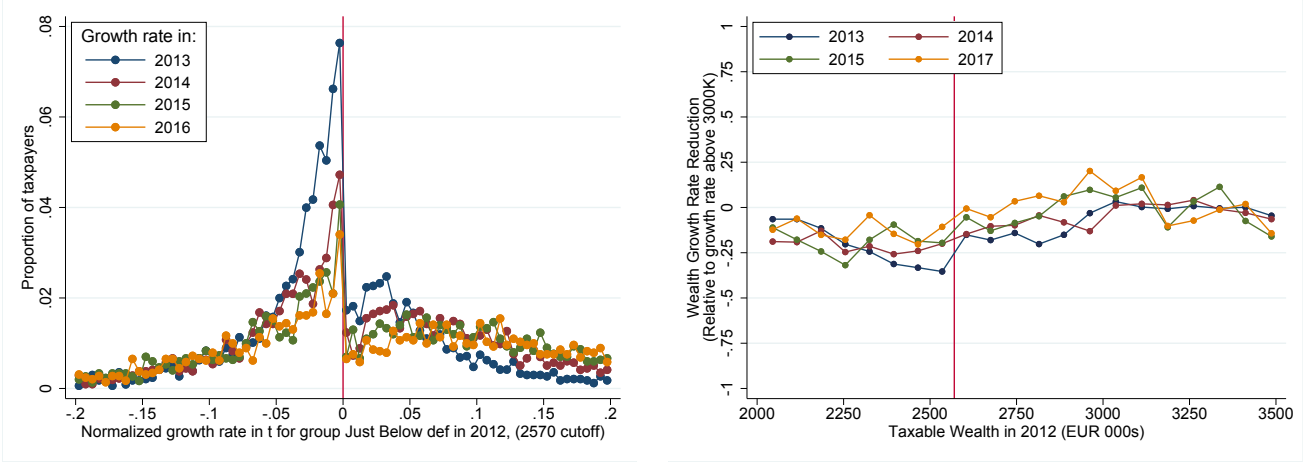
Figure 8: **Behavioral Responses to Simplification Thresholds, Dynamic Bunching**



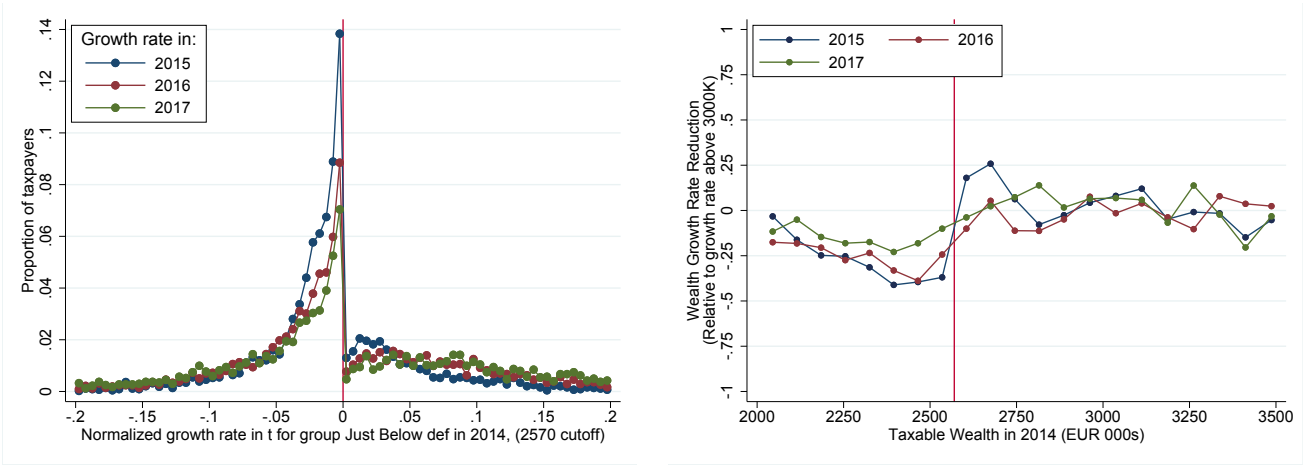
Notes: This figure plots the distributions of normalized growth rates as defined in Section 5.2.1 for the control group and for one treated group ("Just below" in Panel A; 'Far below" in Panel B; "Just above" in Panel C; and "Far Above" in Panel D), where groups are defined in 2012. Each panel summarizes our estimates of the impact of the simplification reform on wealth growth rates, using our dynamic bunching analysis described in Section 5.2. Each panel reports the average growth rate reduction between the treated and control group (ITT); the average growth rate in the control group; the proportion of the treated group that bunches ("bunchers"); the reduction in growth rates among bunchers (LATE); and the counterfactual growth rate of bunchers in the absence of the simplification threshold.

Figure 9: **Wealth Growth Rates Over Time, By Cohorts**

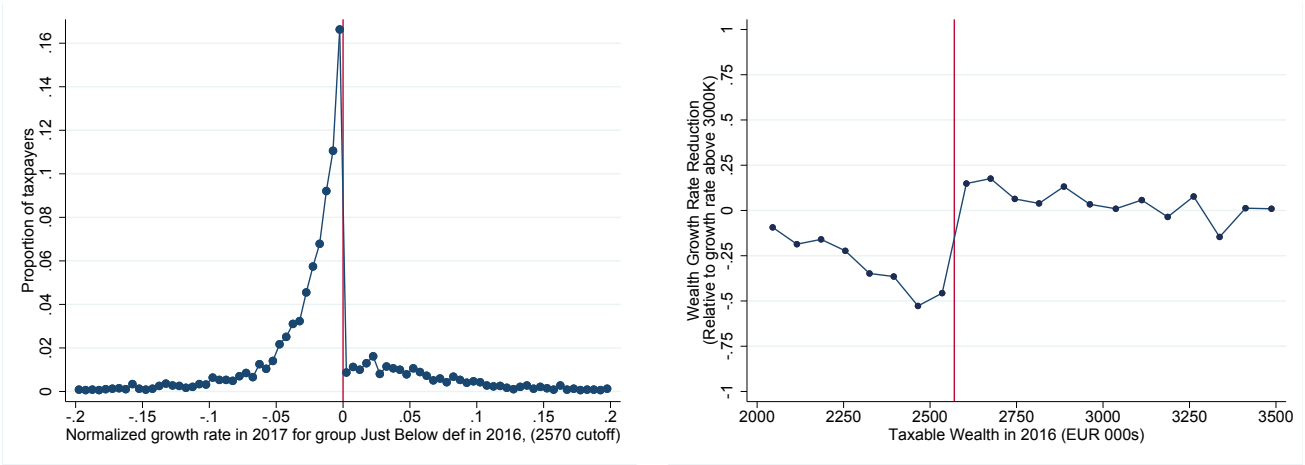
A. Cohort defined in 2012



B. Cohort defined in 2014



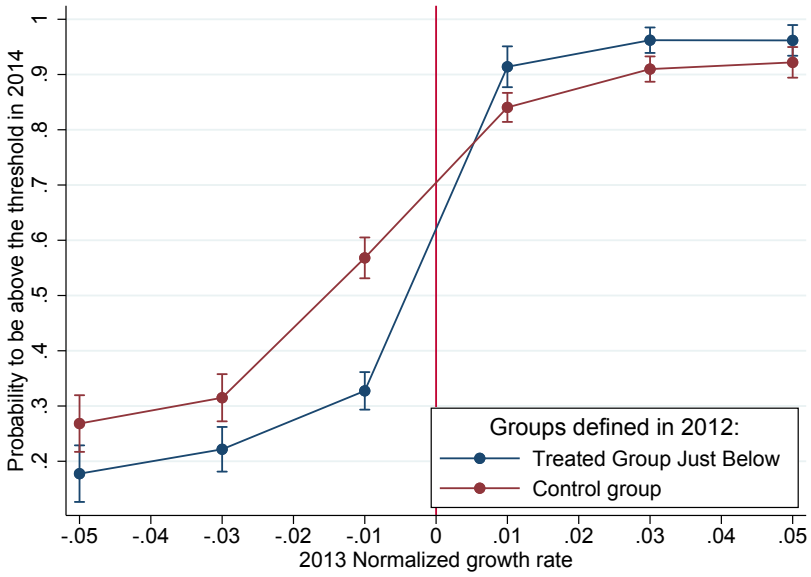
C. Cohort defined in 2016



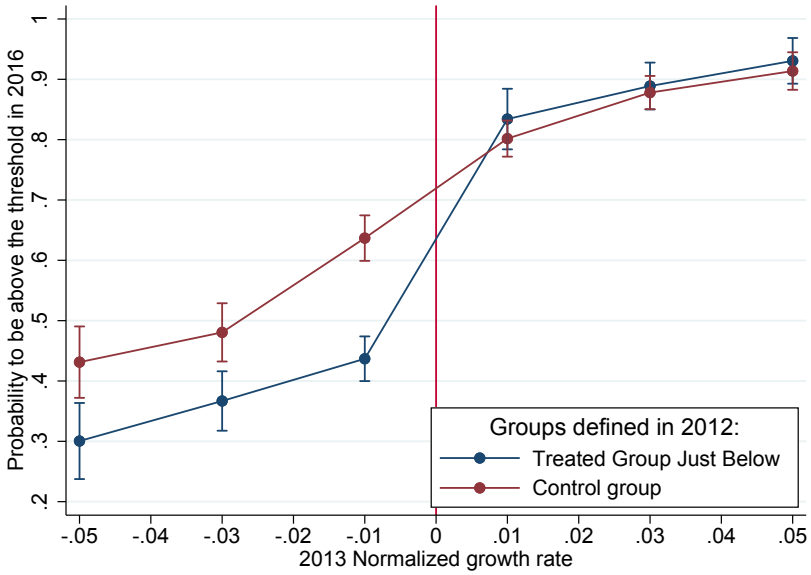
Notes: This figure plots normalized growth rates and wealth growth rate reductions in different years for groups ("cohorts") defined in 2012 (Panel A); 2014 (Panel B); and 2016 (Panel C). In each panel, the left figure show the distribution of normalized growth rates for individuals in the Just Below group (right below the 2,570K threshold). The right figure show the distribution of growth rates by bin of taxable wealth.

Figure 10: **Probability to cross the simplification threshold for bunchers defined from 2012 to 2013**

A. Probability to cross the threshold in 2014



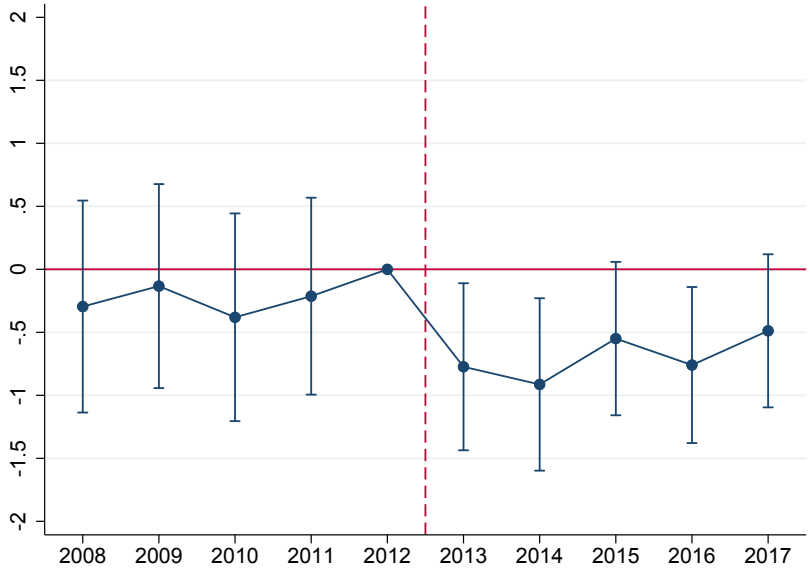
A. Probability to cross the threshold in 2016



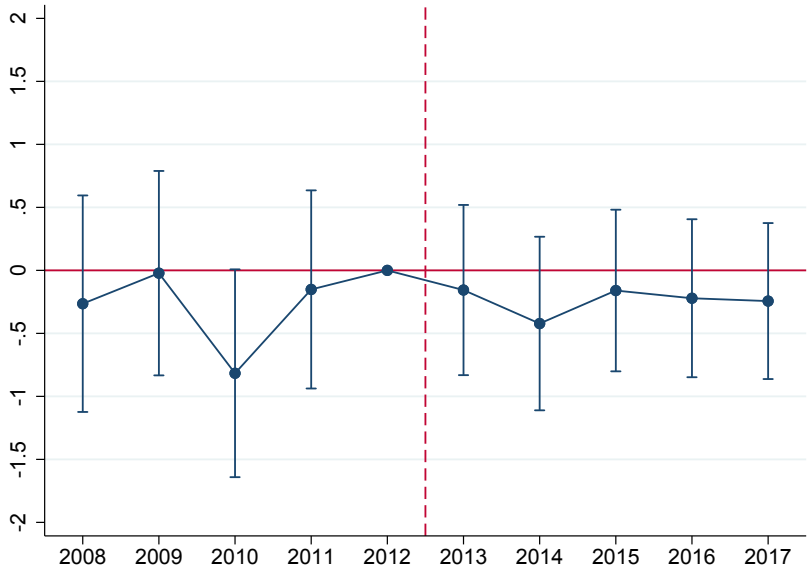
Notes: This figure shows the share of taxpayers who cross the simplification threshold in 2014 (Panel A) and 2016 (Panel B) for our treatment and control group, by normalized growth rates defined between 2012 and 2013. For the control group, the normalized growth rate is defined relative to the placebo threshold.

Figure 11: **Behavioral Responses to Simplification Thresholds, Difference-in-Differences**

A.Taxpayers just below the threshold before the reform

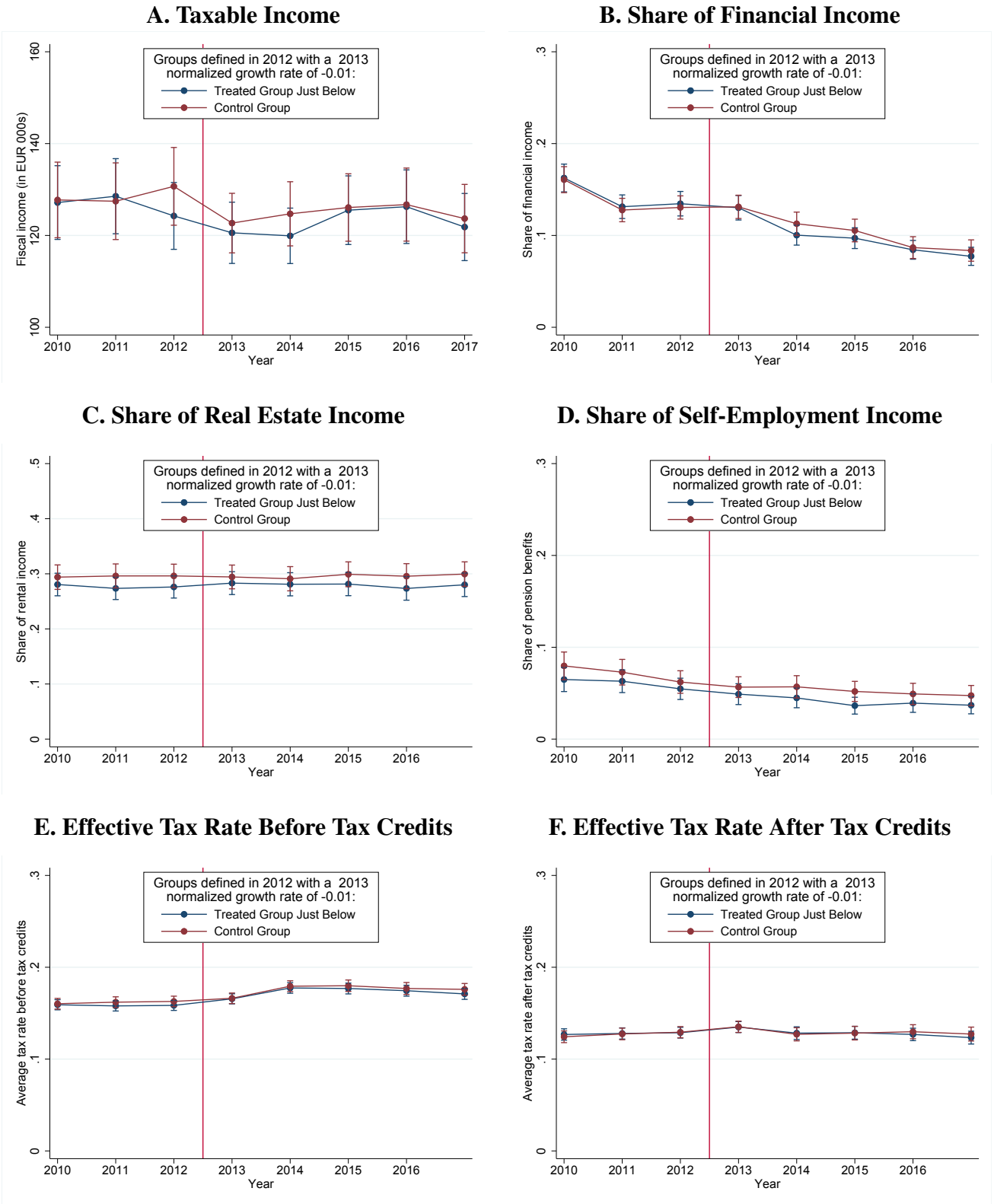


B.Taxpayers just above the threshold before the reform



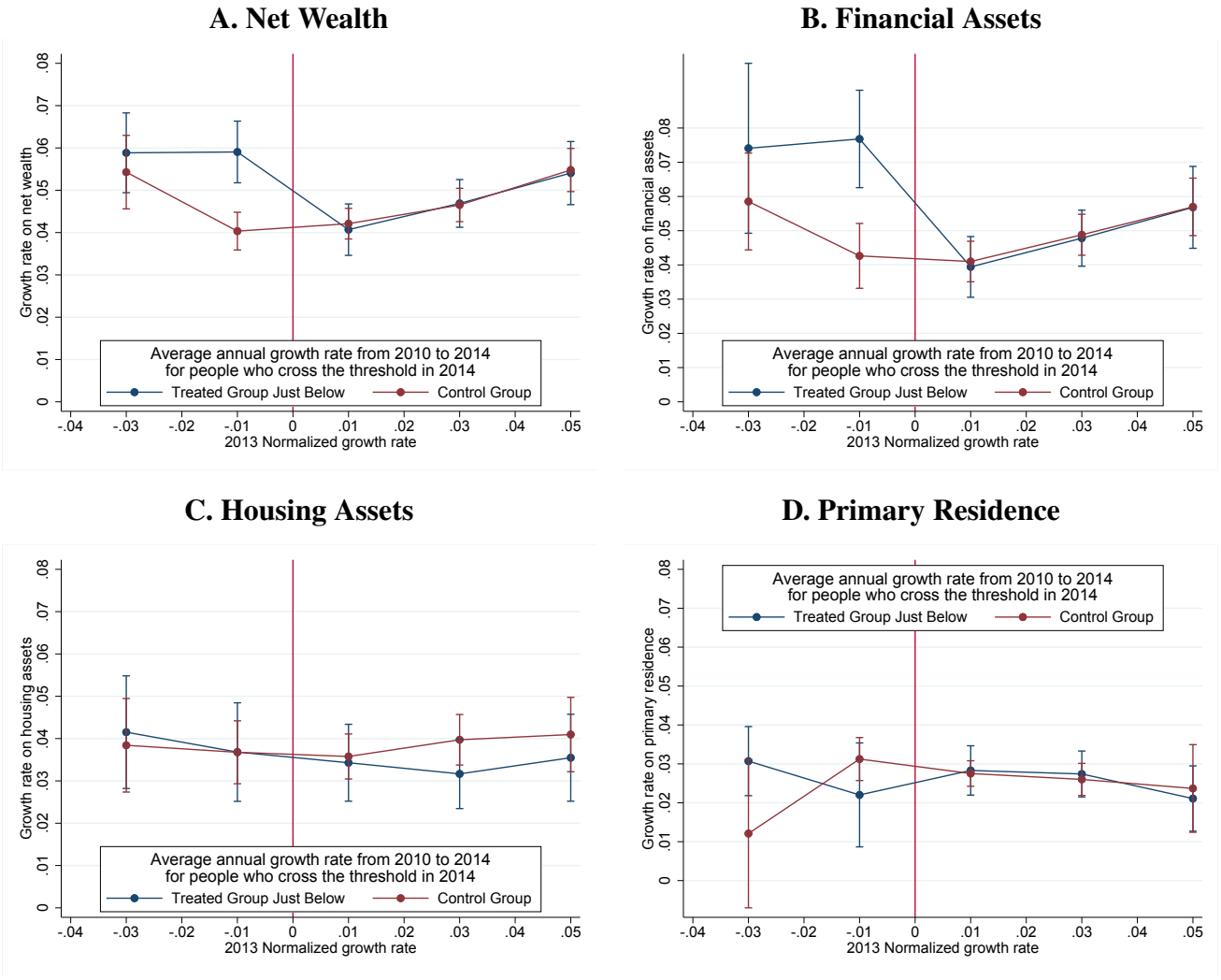
Notes: This figure plots the path of estimated β_{kj} and their 95 percent confidence interval band from the difference-in-differences model summarized by equation (7). The dependent variable is the yearly wealth growth rate for each household (in percentage points). Standard errors are clustered at the individual level. The pre-reform coefficient β_{2012j} is normalized to zero such that estimates can be interpreted relative to pre-reform year. The control group includes taxpayers with wealth in the [2710,2850[bracket in 2012. Panel A shows the effects of the simplification reform for individuals with wealth in the [2500K,2570K[bracket in 2012 (the "Just below" group). Panel B shows the effects of the simplification reform for individuals with wealth in the [2570K,2640K[bracket in 2012 (the "Just above" group).

Figure 12: **Evolution of Reported Income, Income Composition, and Income Taxes**



Notes: This figure shows differences in taxable income(Panel A), income composition (Panels B, C, and D) and income tax rates (Panels E and F) over time for the treated group just below ([2500-2570[) and the control group([2710-2780[) with a normalized growth rate of -0.01 in 2013.

Figure 13: **Average Annual Growth Rate After Crossing the Simplification Threshold**



Notes: This figure shows the average growth rates in components of taxable wealth from 2010 to 2014, for treated and control individuals defined in 2012, who pass their upper group threshold in 2014. Normalized growth rates are defined between 2012 and 2013.

Table 1: **Descriptive Statistics, sample selection**

	All		Tax payers with wealth between 2,360 and 2,850K€ in 2012			
			without restrictions		with restrictions	
	2010	2012	2010	2012	2010	2012
Demographics						
Age	66	67	65	66	65	67
% Married	69	68	72	70	74	73
% Non residents	4	5	4	5	0	0
% Retirees	67	67	63	67	64	69
% Wage Earners	38	39	42	39	41	37
% Self-Employed	23	24	26	25	26	24
% Landlords	67	72	75	75	75	76
Incomes & income tax						
Taxable income	89,668	119,937	123,800	128,344	124,302	127,201
Gross income	114,447	184,104	161,437	180,884	160,928	168,699
Pension benefits (%)	23	17	18	18	18	20
Wages (%)	28	23	28	25	27	25
Self-employment income (%)	13	11	14	13	15	14
Rental income (%)	17	15	19	17	19	19
Financial income (%)	18	22	20	20	19	20
Other (incl. Capital gains) (%)	1	11	1	6	1	2
Income Tax	17,099	29,086	26,941	30,416	26,973	28,976
Income tax rate (% gross income)	15	16	17	17	17	17
Wealth & wealth tax						
Taxable wealth ('000)	1,747	2,656	2,371	2,585	2,380	2,584
Housing assets (%)	46		46		45	
incl. Primary Residence (%)	17		15		15	
Financial assets (%)	62		62		63	
Liabilities (%)	8		8		8	
Wealth tax	6,094	16,919	7,944	12,537	7,925	12,533
Wealth tax rate (%)	0.3	0.6	0.3	0.5	0.3	0.5
Wealth tax (total, billion)	3,6	4.9	0.21	0.36	0.17	0.28
Tax units	590,031	289,119	26,677	28,872	21,243	22,331

Table 2: **Behavioral Responses to Simplification Threshold, Difference-in-Differences**

	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 (2010-2011)	-0.30 (0.34)	-0.32 (0.33)	-0.03 (0.32)	-0.48 (0.35)
Post-Period (2013)	-0.77** (0.34)	-0.38 (0.32)	-0.30 (0.31)	-0.16 (0.34)
Post-Period (2014-2015)	-0.74** (0.30)	-0.43 (0.29)	-0.16 (0.28)	-0.30 (0.31)
Post-Period (2016-2017)	-0.63** (0.29)	-0.19 (0.27)	-0.25 (0.27)	-0.23 (0.30)
Constant		3.56*** (0.07)		
Observations		241,259		
Individuals		27,021		

Notes: This table summarizes estimates from Equation (7). The dependent variable is the yearly wealth growth rate. Standard errors are clustered at the individual level. The pre-reform coefficient β_{2012j} is normalized to zero such that estimates can be interpreted relative to pre-reform year. The control group includes taxpayers with wealth in the [2710-2850] bracket in 2012.

Table 3: **Behavioral Responses to Simplification Threshold, Dynamic Bunching vs. Diff-in-diff**

	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[
	Diff-in-diff			
Average effect (ITT)	-0.77**	-0.38	-0.30	-0.16
	(0.34)	(0.32)	(0.31)	(0.34)
	Dynamic bunching			
Average effect (ITT)	-0.47***	-0.44***	-0.37***	-0.18***
	(0.07)	(0.08)	(0.08)	(0.03)
Share of bunchers	14.7***	8.5***	6.6***	3.9**
	(1.1)	(1.0)	(1.1)	(0.7)
Effect among bunchers (LATE)	-3.2***	-5.3***	-5.8***	-4.8***
	(0.4)	(1.0)	(1.6)	(0.9)

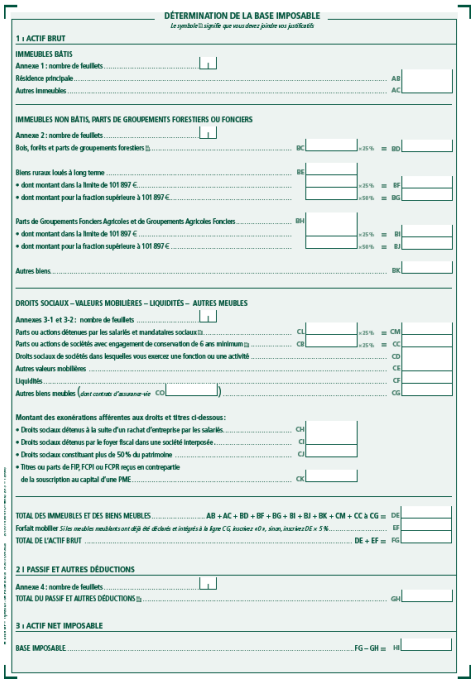
Notes: This table summarizes our estimates using dynamic bunching or standard difference-in-differences designs. More details are provided in the text.

Appendix

A Additional Figures and Tables

Figure A.1: **Reporting requirements: Simplified versus Detailed reporting**

Detailed reporting **Simplified reporting**



DÉTERMINATION DE LA BASE IMPOSABLE

Le symbole □ signifie que vous devez joindre vos justificatifs

1 | ACTIF BRUT

IMMEUBLES BÂTIS

Annexe 1 : nombre de feuillets ..... | |

Résidence principale ..... AB

Autres immeubles ..... AC

IMMEUBLES NON BÂTIS, PARTS DE GROUPEMENTS FORESTIERS OU FONCIERS

Annexe 2 : nombre de feuillets ..... | |

Bois, forêts et parts de groupements forestiers □ ..... BC ×35 % = BD

Biens ruraux loués à long terme ..... BE

• dont montant dans la limite de 101 897 € ..... ×35 % = BF

• dont montant pour la fraction supérieure à 101 897 € ..... ×50 % = BG

Parts de Groupements Fonciers Agricoles et de Groupements Agricoles Fonciers ..... BH

• dont montant dans la limite de 101 897 € ..... ×35 % = BI

• dont montant pour la fraction supérieure à 101 897 € ..... ×50 % = BJ

Autres biens ..... BK

DROITS SOCIAUX – VALEURS MOBILIÈRES – LIQUIDITÉS – AUTRES MEUBLES

Annexes 3-1 et 3-2 : nombre de feuillets ..... | |

Parts ou actions détenues par les salariés et mandataires sociaux □ ..... CL ×35 % = CM

Parts ou actions de sociétés avec engagement de conservation de 6 ans minimum □ ..... CB ×25 % = CC

Droits sociaux de sociétés dans lesquelles vous exercez une fonction ou une activité ..... CD

Autres valeurs mobilières ..... CE

Liquidités ..... CF

Autres biens meubles (*dont contrats d'assurance-vie* CG) ..... CG

Montant des exonérations afférentes aux droits et titres ci-dessous :

• Droits sociaux détenus à la suite d'un rachat d'entreprise par les salariés ..... CH

• Droits sociaux détenus par le foyer fiscal dans une société interposée CI

• Droits sociaux constituant plus de 50 % du patrimoine ..... CJ

• Titres ou parts de FIP, FCPI ou FCPR reçus en contrepartie de la souscription au capital d'une PME ..... CK

TOTAL DES IMMEUBLES ET DES BIENS MEUBLES ..... AB + AC + BD + BF + BG + BI + BJ + BK + CM + CC à CG = DE

Forfait mobilier *Si les meubles meublants ont déjà été déclarés et intégrés à la ligne CG, inscrivez « 0 », sinon, inscrivez DE × 5 %* ..... EF

TOTAL DE L'ACTIF BRUT ..... DE + EF = FG

2 | PASSIF ET AUTRES DÉDUCTIONS

Annexe 4 : nombre de feuillets ..... | |

TOTAL DU PASSIF ET AUTRES DÉDUCTIONS □ ..... GH

3 | ACTIF NET IMPOSABLE

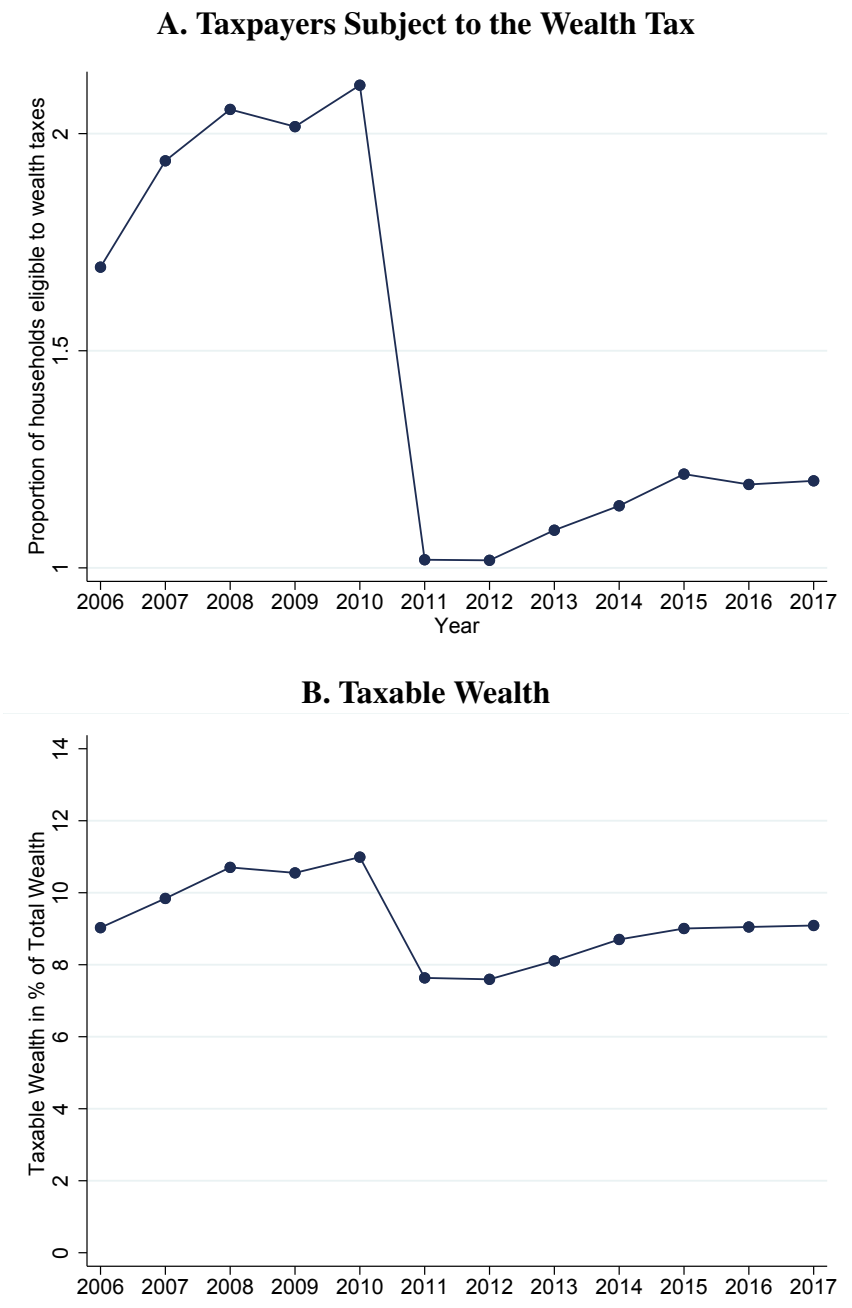
BASE IMPOSABLE ..... FG – GH = HI

IMPÔT DE SOLIDARITÉ SUR LA FORTUNE

Base nette imposable *pour un patrimoine au 1.1.2013 supérieur à 1 300 000 € et inférieur à 2 570 000 €* 9HI

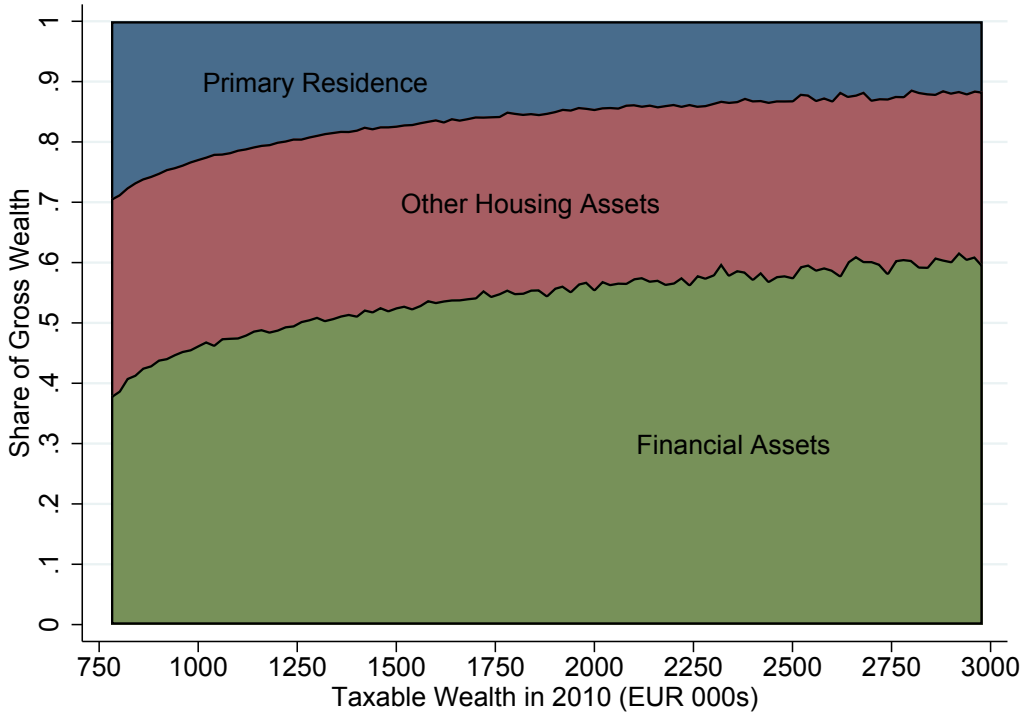
Valeur brute du patrimoine 9FG

Figure A.2: **Wealth Tax Base in France**



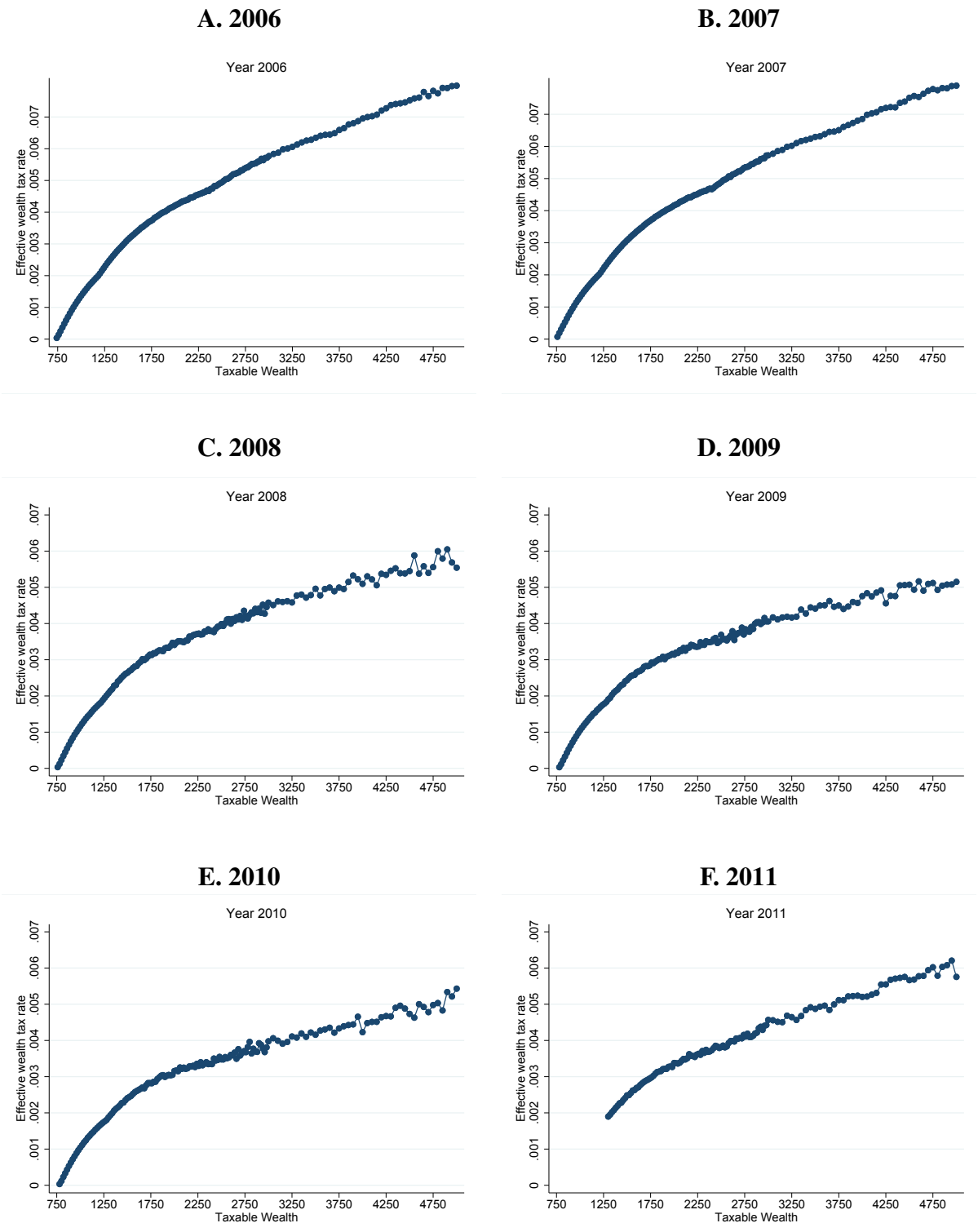
Notes: This Figure shows the evolution of the share of taxpayers liable to the wealth tax in France (top panel) and the evolution of taxable wealth over total wealth (bottom panel). In 2011, the French government increased the exemption threshold from 700K to 1,300K.

Figure A.3: **Composition of Taxable Wealth in 2010**



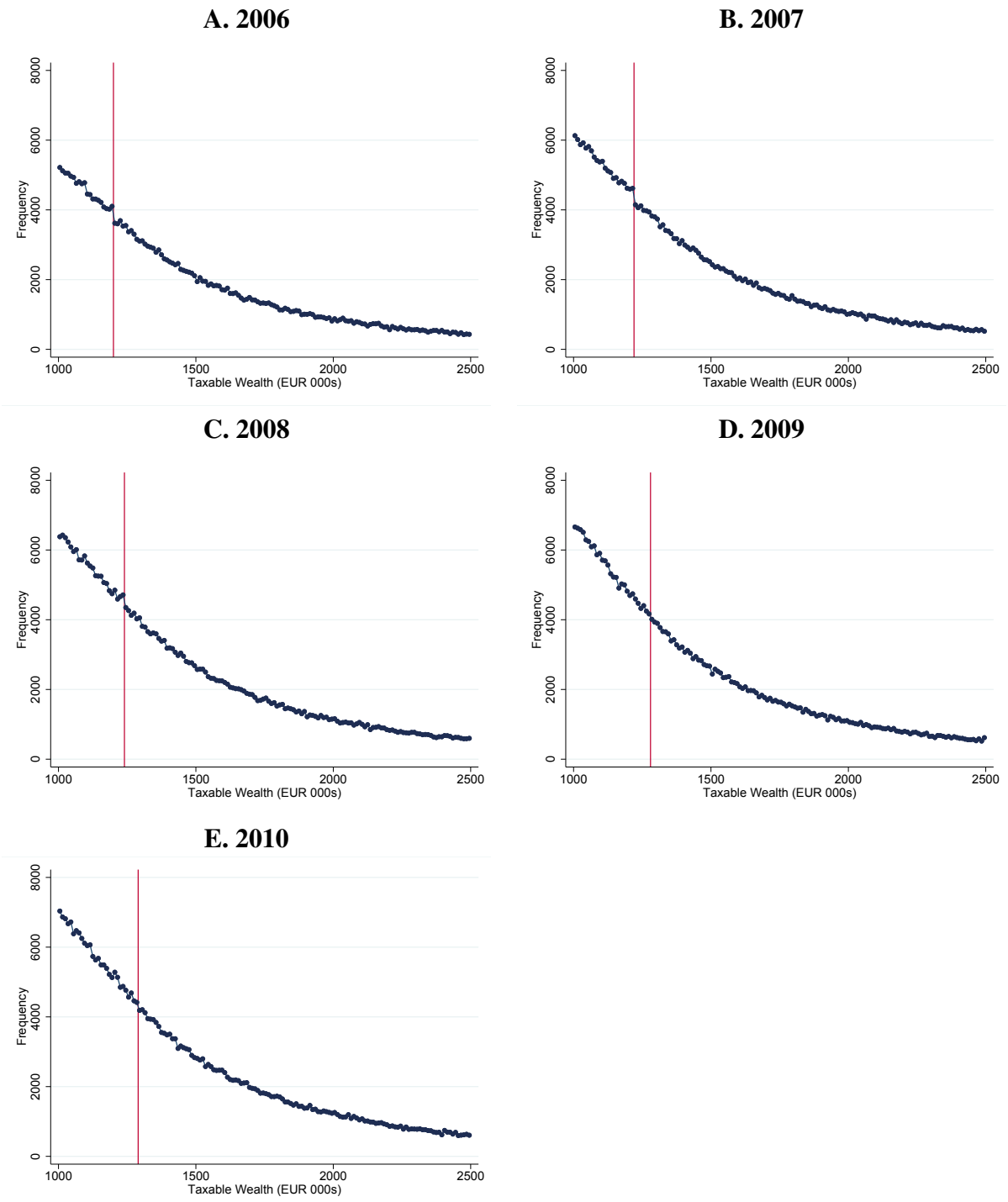
Notes: This Figure describes the composition of taxable wealth in 2010 by level of taxable wealth.

Figure A.4: **Effective wealth tax rates**



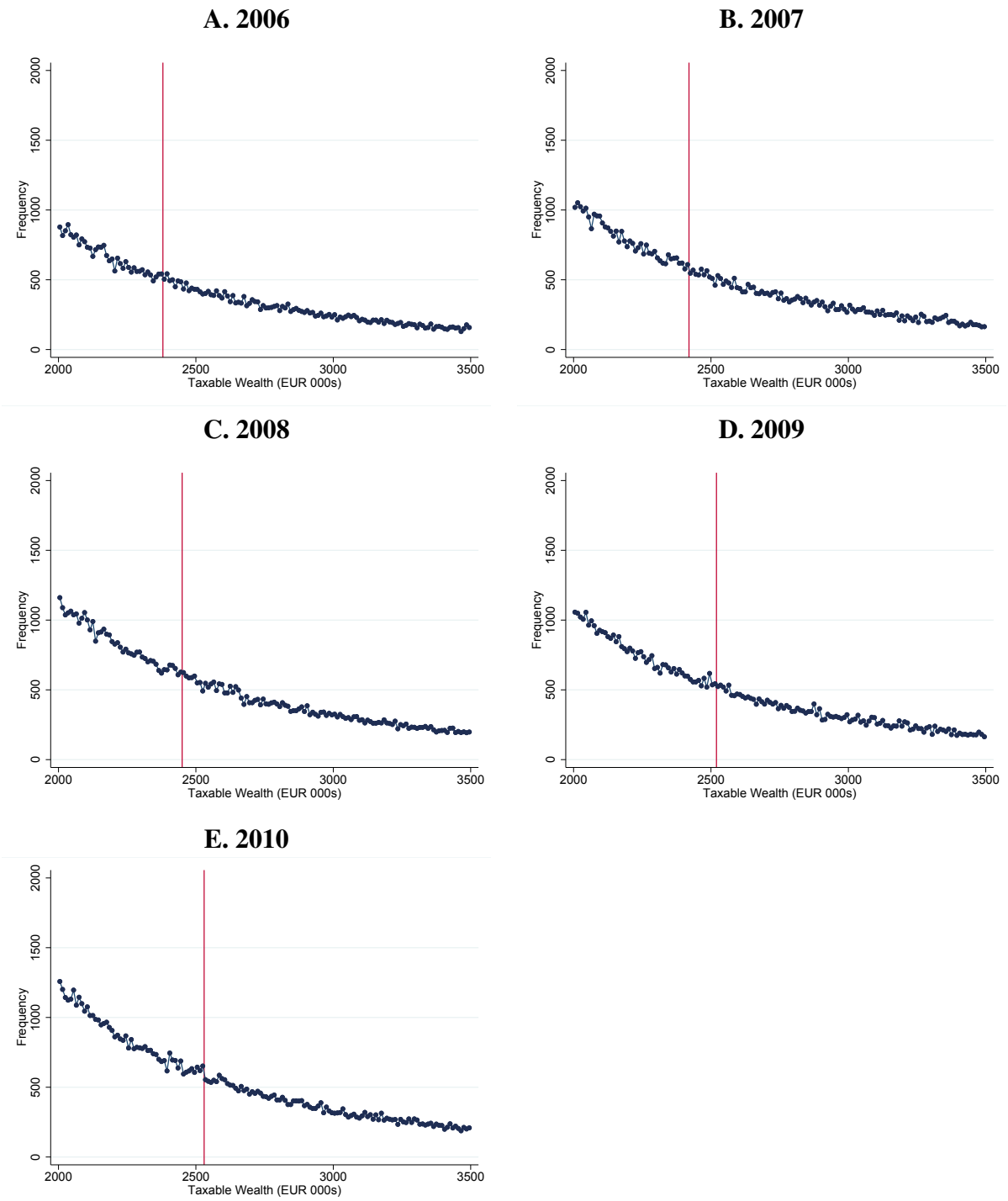
Notes: This Figure shows the effective wealth tax rates in France for the period 2006-2011.

Figure A.5: **Distribution of Wealth at the Second MTR Threshold**



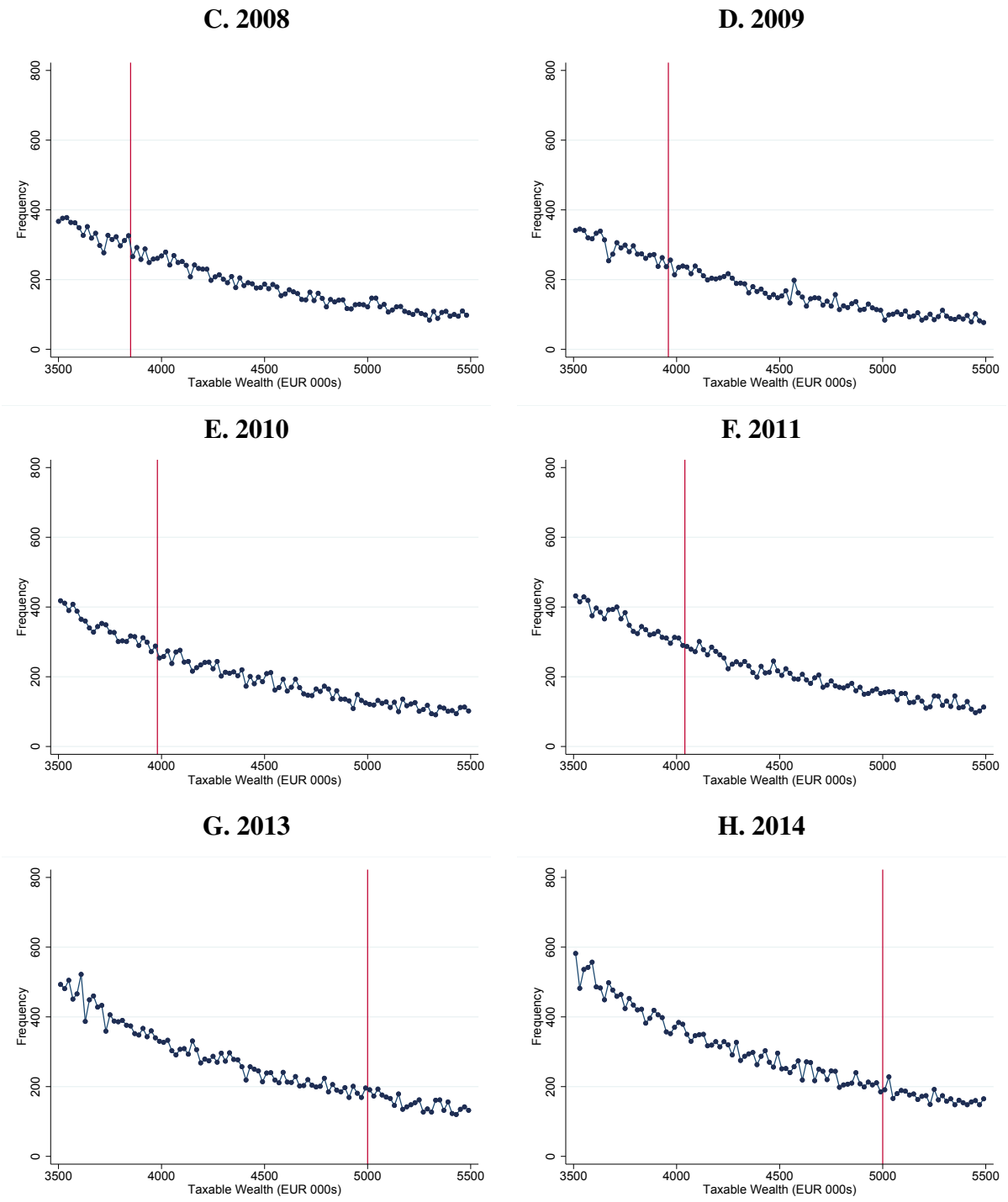
Notes: This Figure shows the distribution of taxpayers by level of net taxable wealth around the 2d wealth tax bracket threshold for the period 2006-2010.

Figure A.6: **Distribution of Wealth at the Third MTR Threshold**



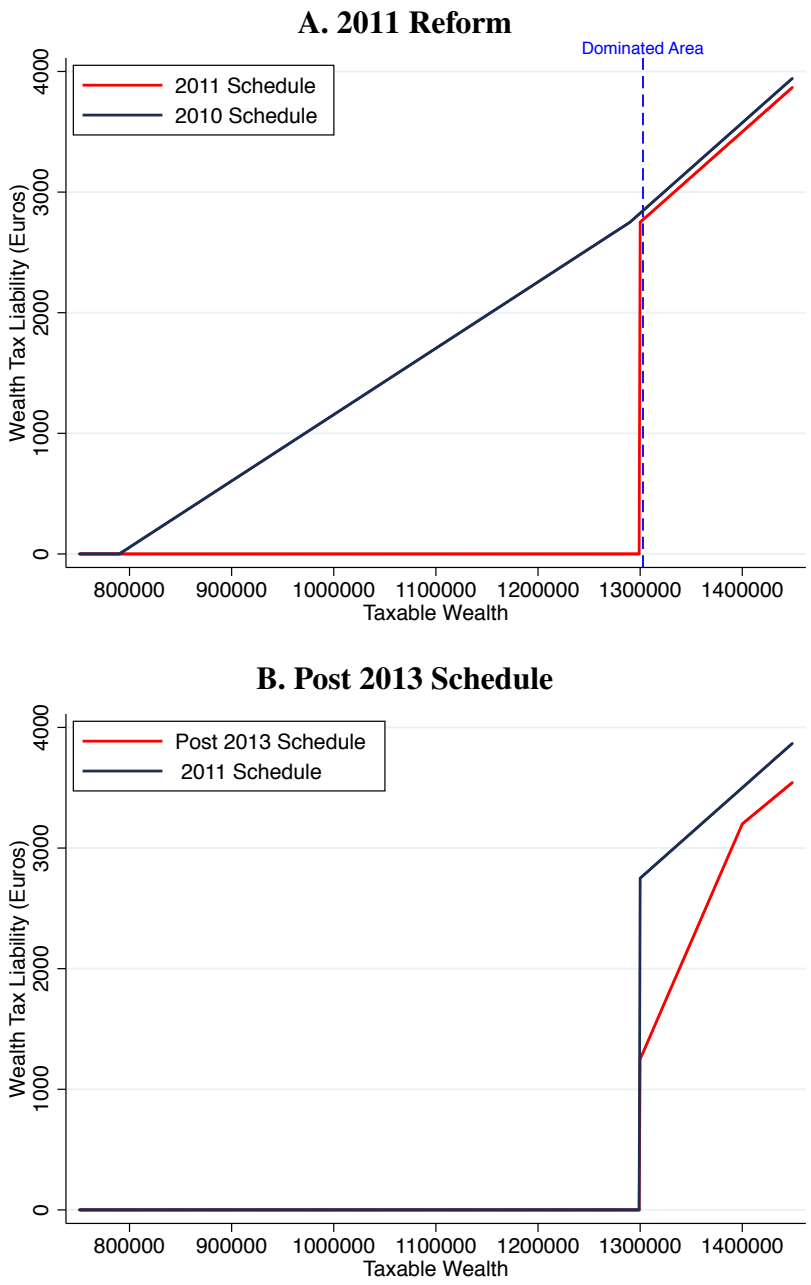
Notes: This Figure shows the distribution of net taxable wealth around the 3rd wealth tax bracket threshold for the period 2006-2010.

Figure A.7: **Distribution of Wealth at the 4th MTR Threshold**



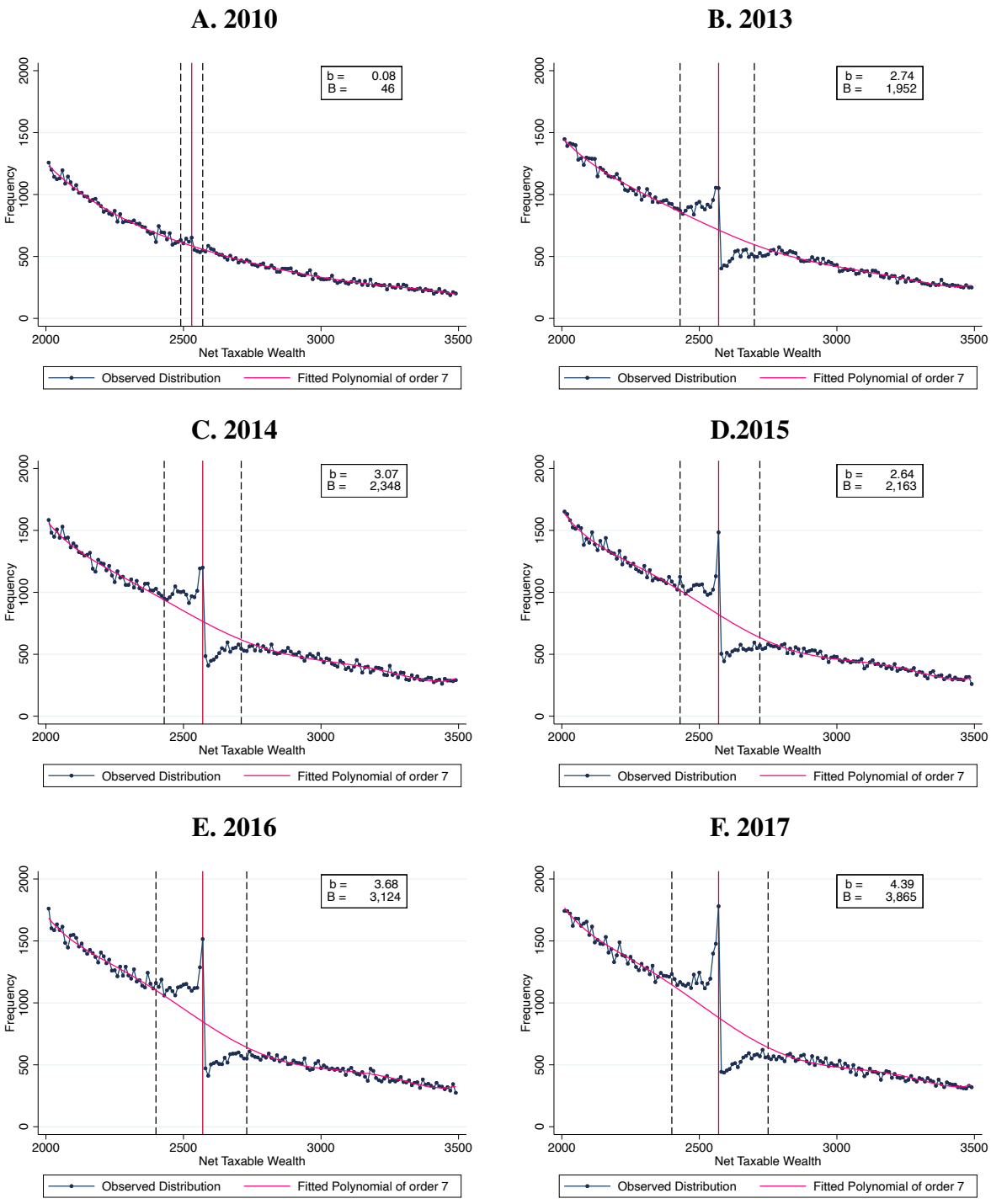
Notes: This Figure shows the distribution of net taxable wealth around the 4th wealth tax bracket threshold for the period 2008-2014. .

Figure A.8: **Large Change in Exemption Threshold**



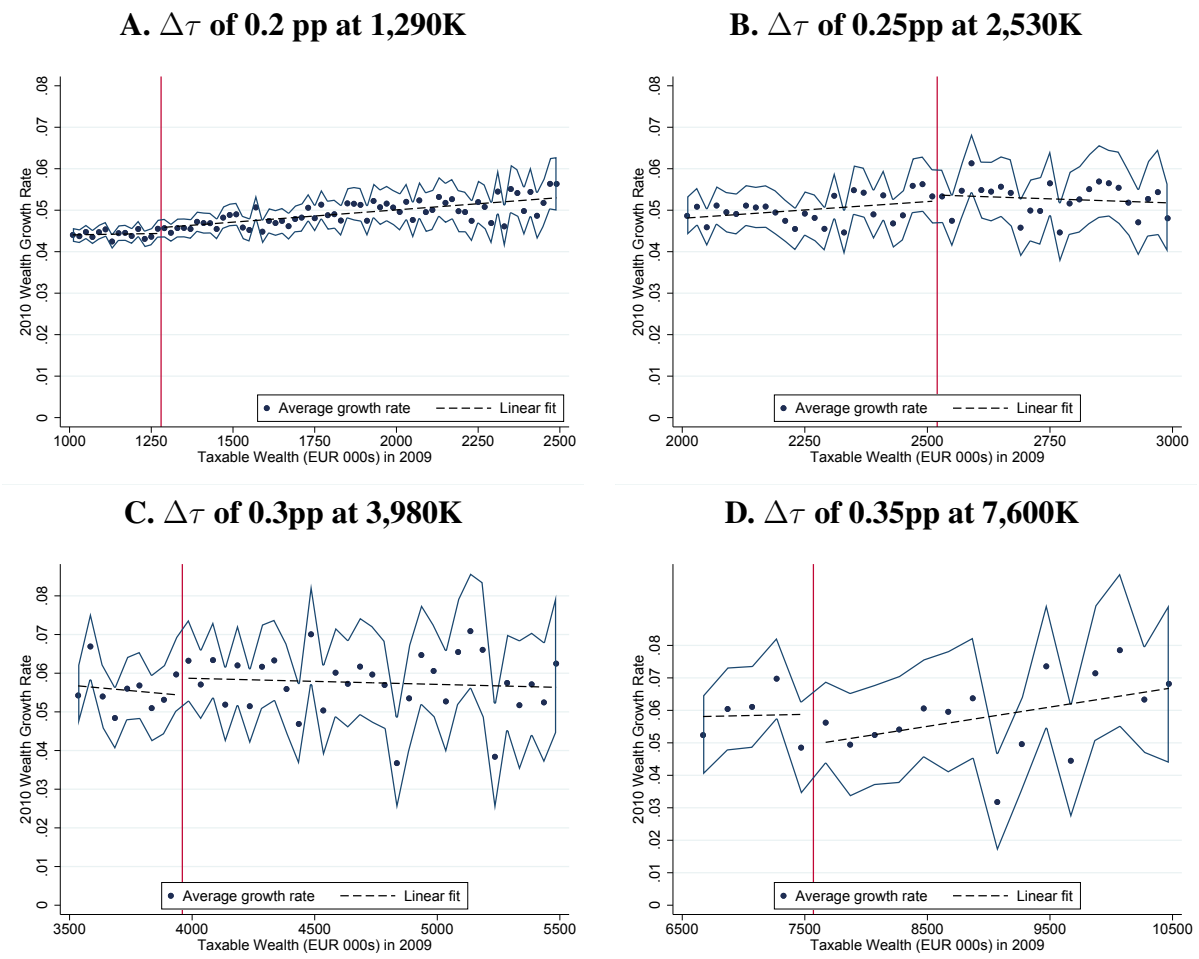
Notes: This Figure describes the wealth tax exemption reform of 2011.

Figure A.9: **Excess mass estimates using static bunching**



Notes: This figure shows the distribution of taxable wealth in bins of 10,000 euros around the third bracket threshold of the French wealth tax, for year 2010, and each year between 2013 and 2017. In 2010, the threshold was 2,530K and was associated with a kink in the wealth tax schedule. From 2013 to 2017, the threshold was 2,570K and was associated with a kink in the wealth tax schedule and a change in reporting requirements (notch). We plot the observed distribution in blue and an estimate of the counterfactual distribution absent the kink in pink. The counterfactual is obtained by fitting a 7th-order polynomial to the observed distribution, excluding a segment that we determine following the standard bunching methodology detailed in Appendix C. The bunching estimate b equals excess mass at the kink (B), scaled by the height of the counterfactual distribution at the kink.

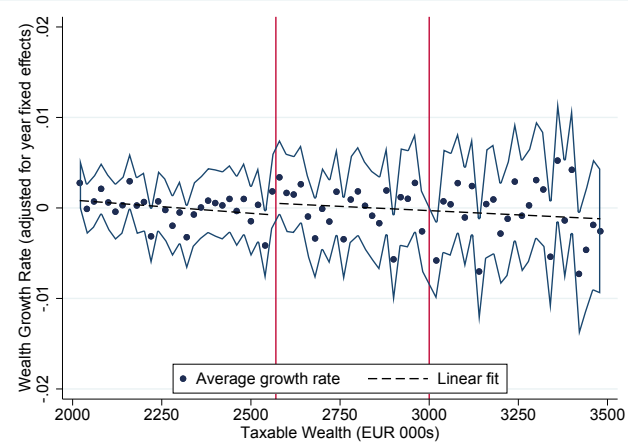
Figure A.10: **Behavioral Responses to Marginal Tax Rates, Wealth Growth Rates**



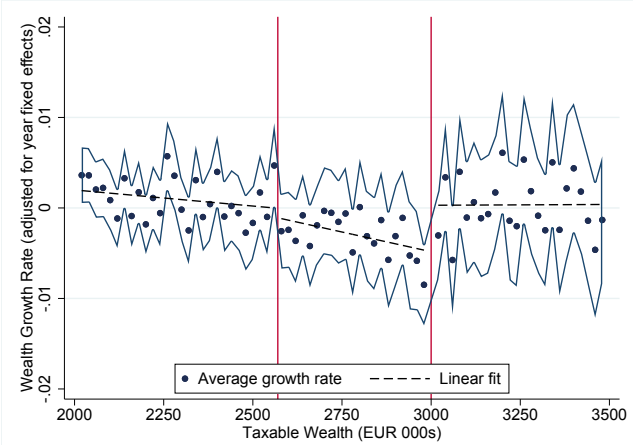
Notes: Notes: This Figure shows the pooled distribution of yearly wealth growth rates by individuals' wealth bin over the period. We plot the average wealth growth rate by taxable wealth bin around the marginal tax rate thresholds depicted by the vertical line in each figure. We fit a linear modeal below and above the cut-off that is depicted by the fitted dashed black line. In each figure, we group householdsd into bins of 10,000 net taxable wealth for Panel A and B, 20,000 in Panel C and 50,000 in Panel D. The shaded area depicts 95% confidence intervals.

Figure A.11: **Wealth Growth Rates Adjusted for Years Fixed Effects**

A. No Simplification Threshold in 2006-2010



B. Simplification Threshold is 3,000K in 2011-2012



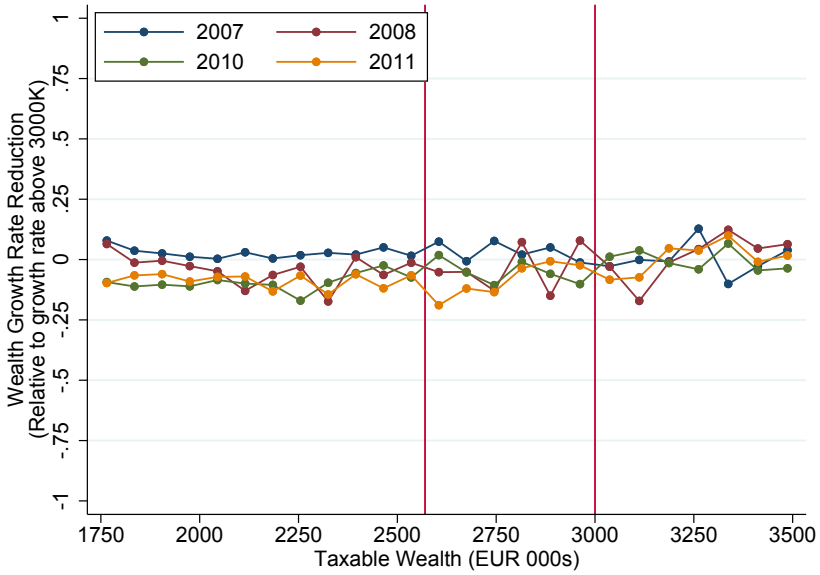
C. Simplification threshold is 2,570K in 2013-2017



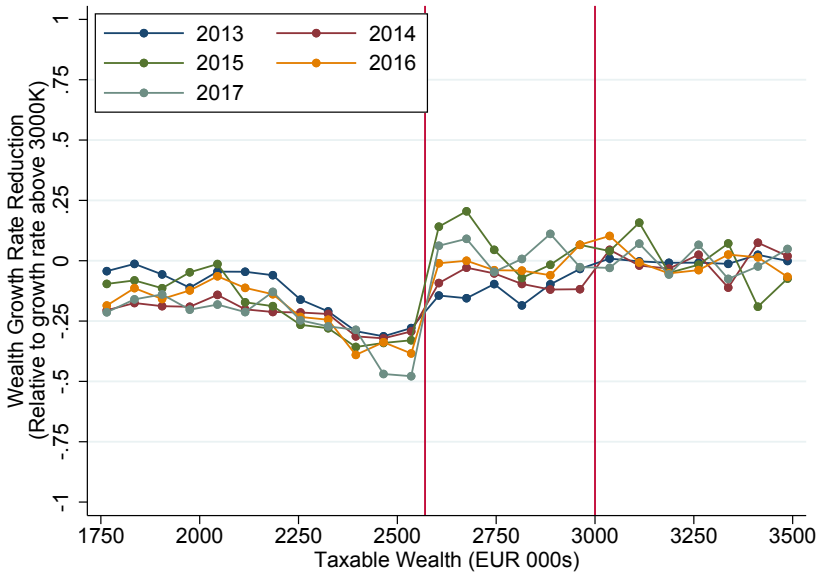
Notes: This Figure shows the pooled distribution of yearly wealth growth rates by individuals' wealth bin over the period, after adjusting for year fixed effects. In each figure, we group household into bins of 20,000 declared net taxable wealth. We plot the average wealth growth rate by taxable wealth bin around the simplification thresholds depicted by the vertical line in each figure. We fit a linear modeal below and above the cut-off that is depicted by the fitted dashed black line. Panel A pools all observations for the pre-simplification period (2006-2010), Panel B pools all observations for the first simplification threshold period (2011-2012) and Panel C pools all observations for the second simplification threshold period (2013-2017). The shaded area depicts 95% confidence intervals.

Figure A.12: **Cross-Section of Wealth Growth Rates**

A. Before the Introduction of Simplified Return

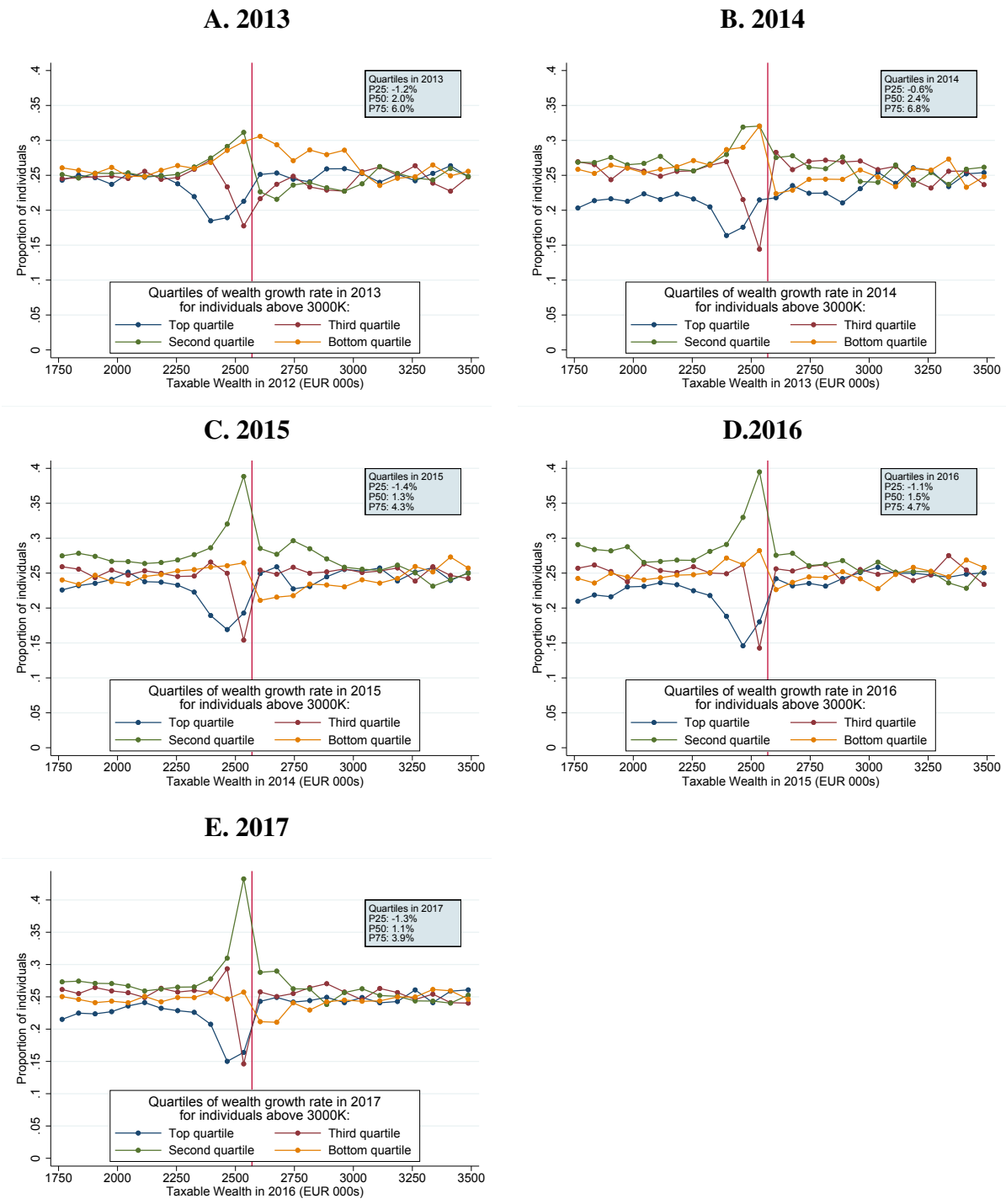


B. Simplification threshold is 2,570K in 2013-2017



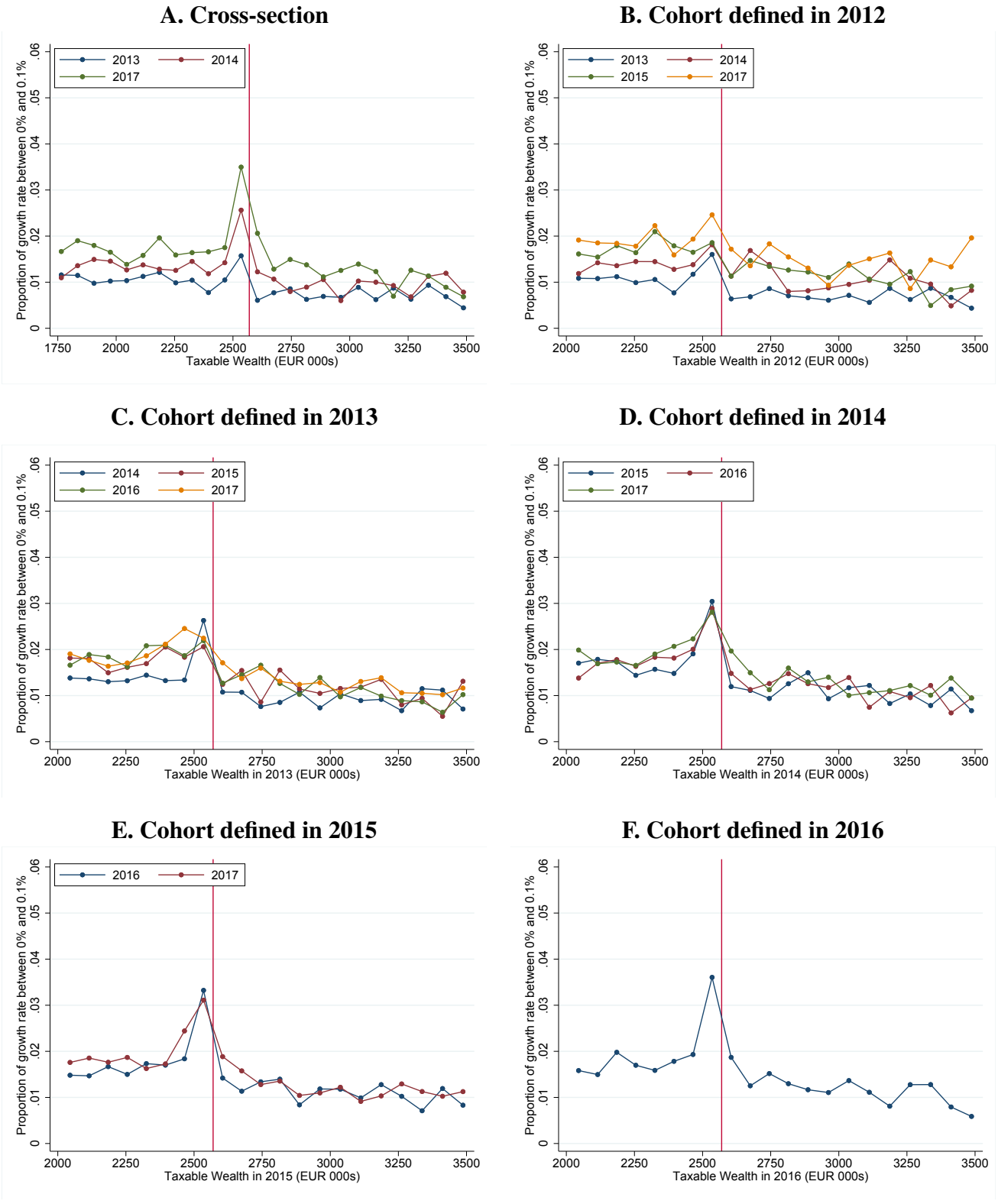
Notes: This figure shows wealth growth rate reduction by 70K bins of taxable wealth each year. For each bin, we compute the wealth growth rates reduction and normalize it to the average wealth growth rate reduction for taxpayers above 3,000K in the same year. The two vertical red lines denote the simplification thresholds in place during the period 2011-2017.

Figure A.13: **Share of Taxpayers by Quartile of Wealth Growth Rates**



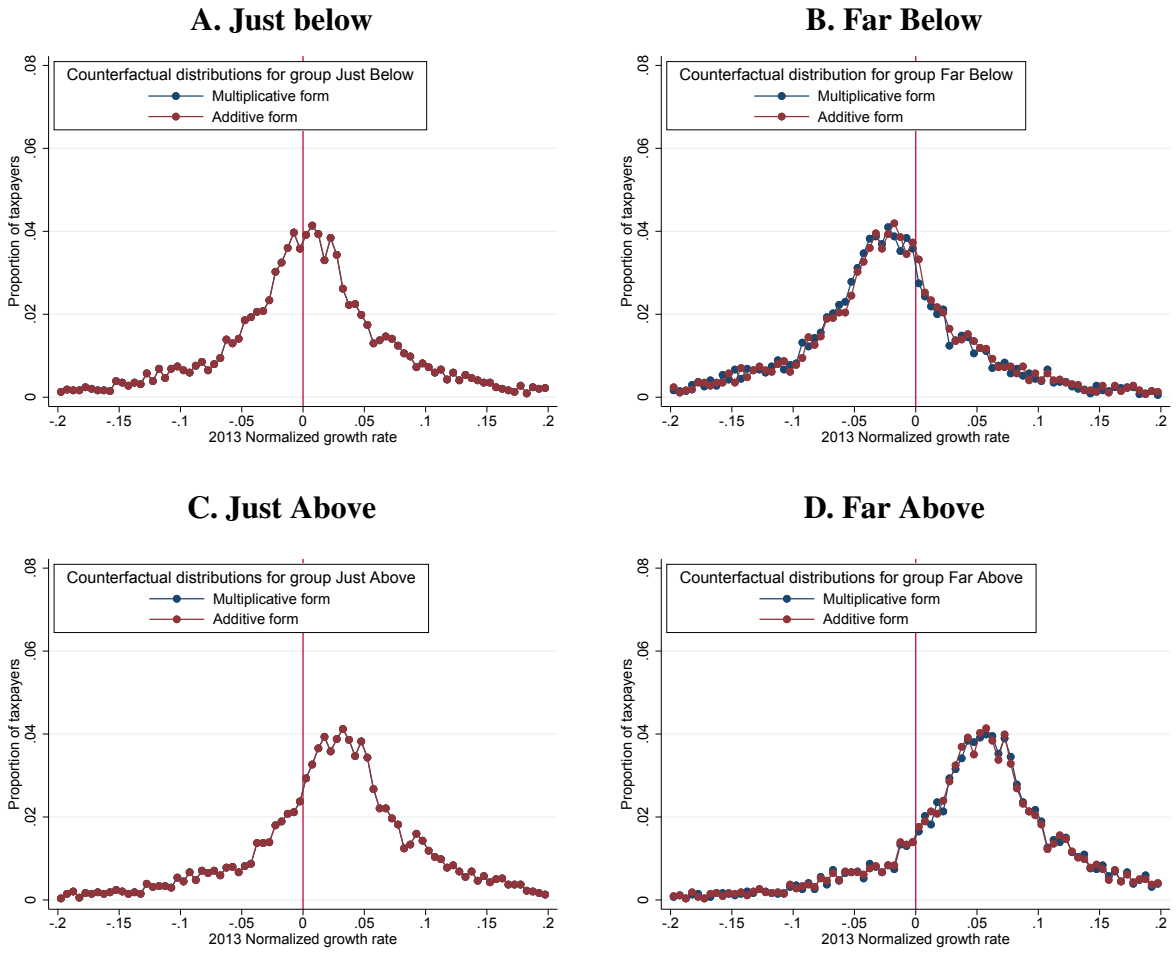
Notes: This figure shows the share of taxpayers by quartile of wealth growth rates.

Figure A.14: **Proportion of taxpayers with 0 growth rate by cohort over time**



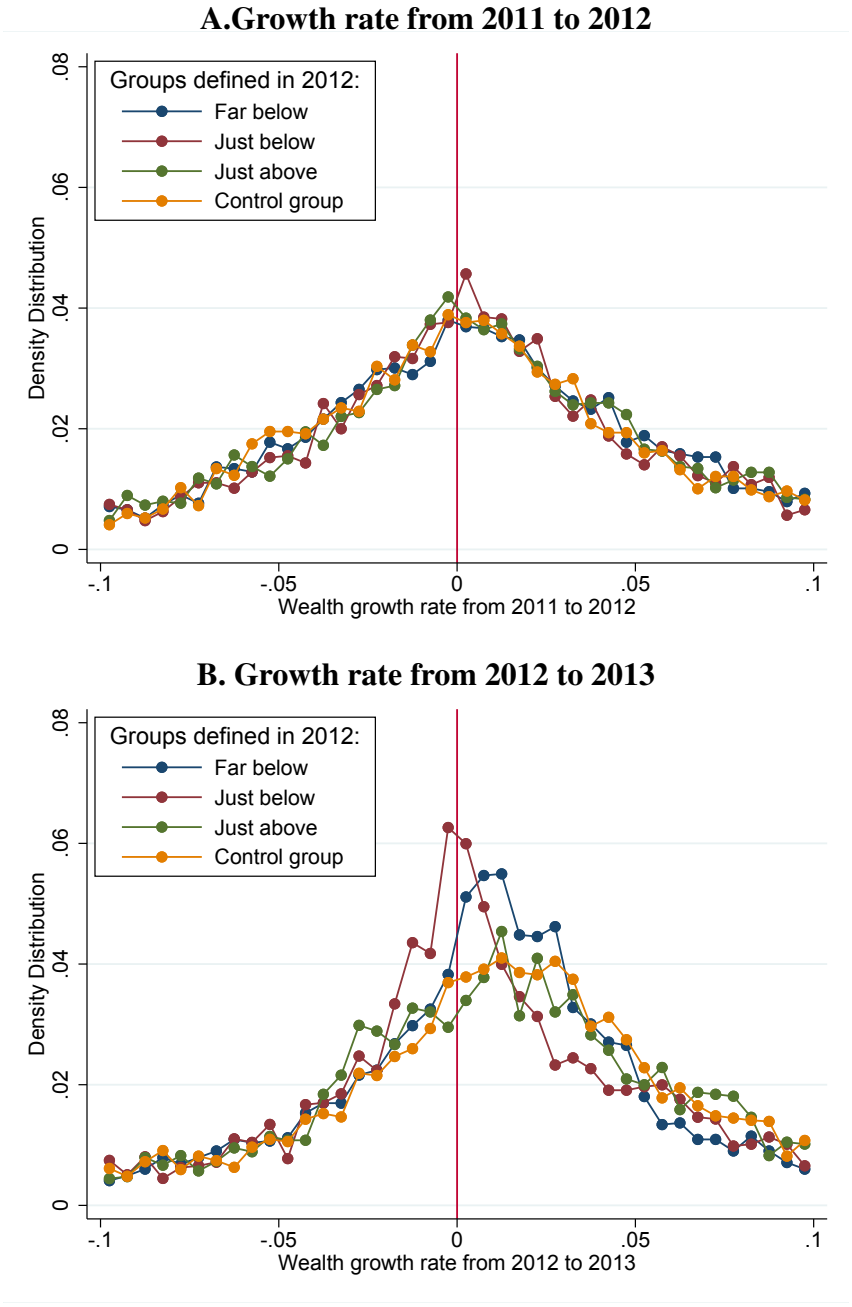
Notes: This figure shows the share of taxpayers experiencing a wealth growth rate between 0% and 0.1%, that we call "0 growth rate". Panel A plots the share of taxpayers with 0 growth rate in the for years 2013, 2014 and 2017 in cross-section. Panel B to E then plot the yearly share for taxpayers with 0 growth rate for each cohort defined from 2012 (Panel B) to 2016 (Panel F).

Figure A.15: **Robustness checks on counterfactual distributions: Multiplicative vs. additive forms**



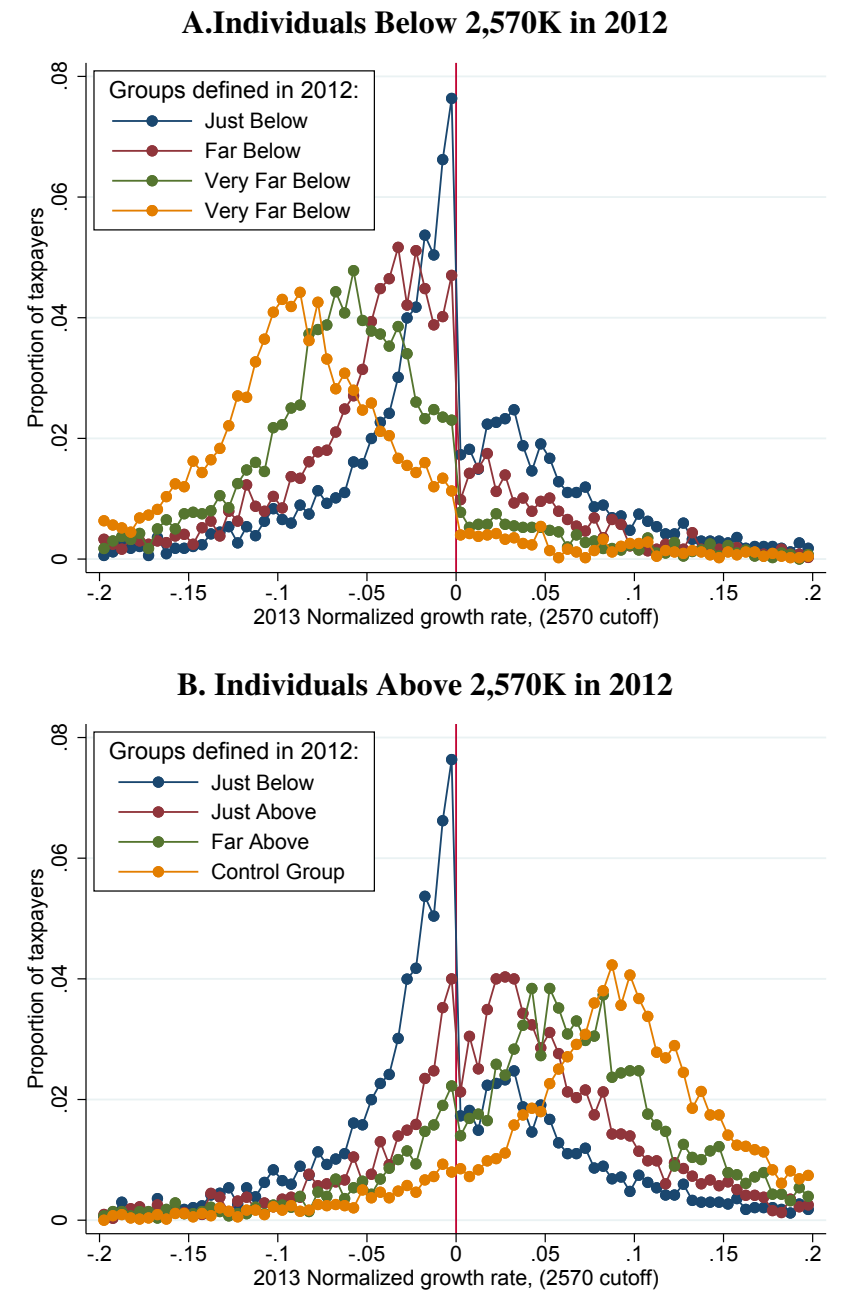
Notes: the additive (Equation 3) instead of the multiplicative (Equation 2) formulas, as described by Equation 3

Figure A.16: **Behavioral Responses to Simplification Thresholds, Wealth Growth Rates Distribution**



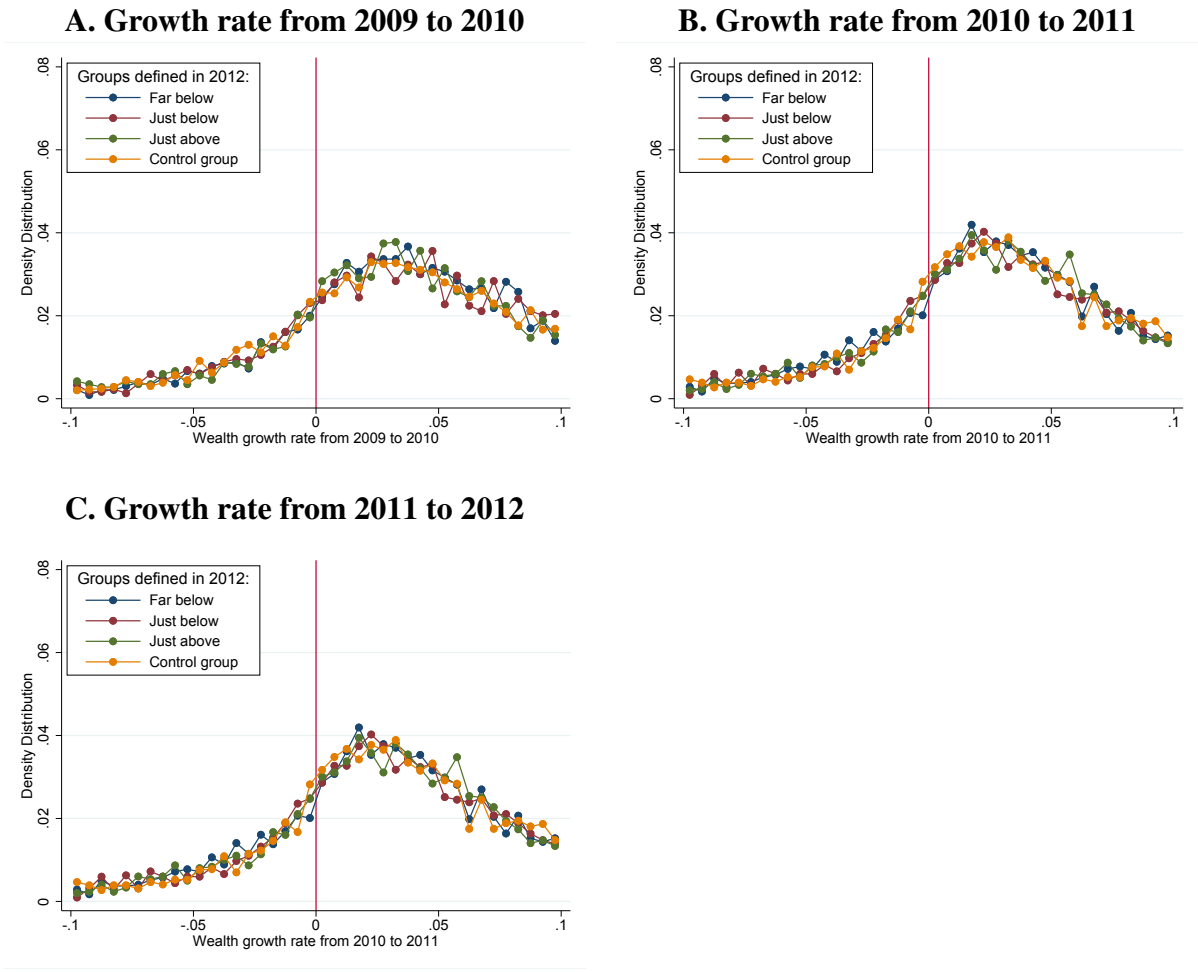
Notes: This Figure plots the distribution of wealth growth rates for households with different levels of taxable wealth in 2012.

Figure A.17: **Behavioral Responses to Simplification Thresholds, Normalized Growth Rates**



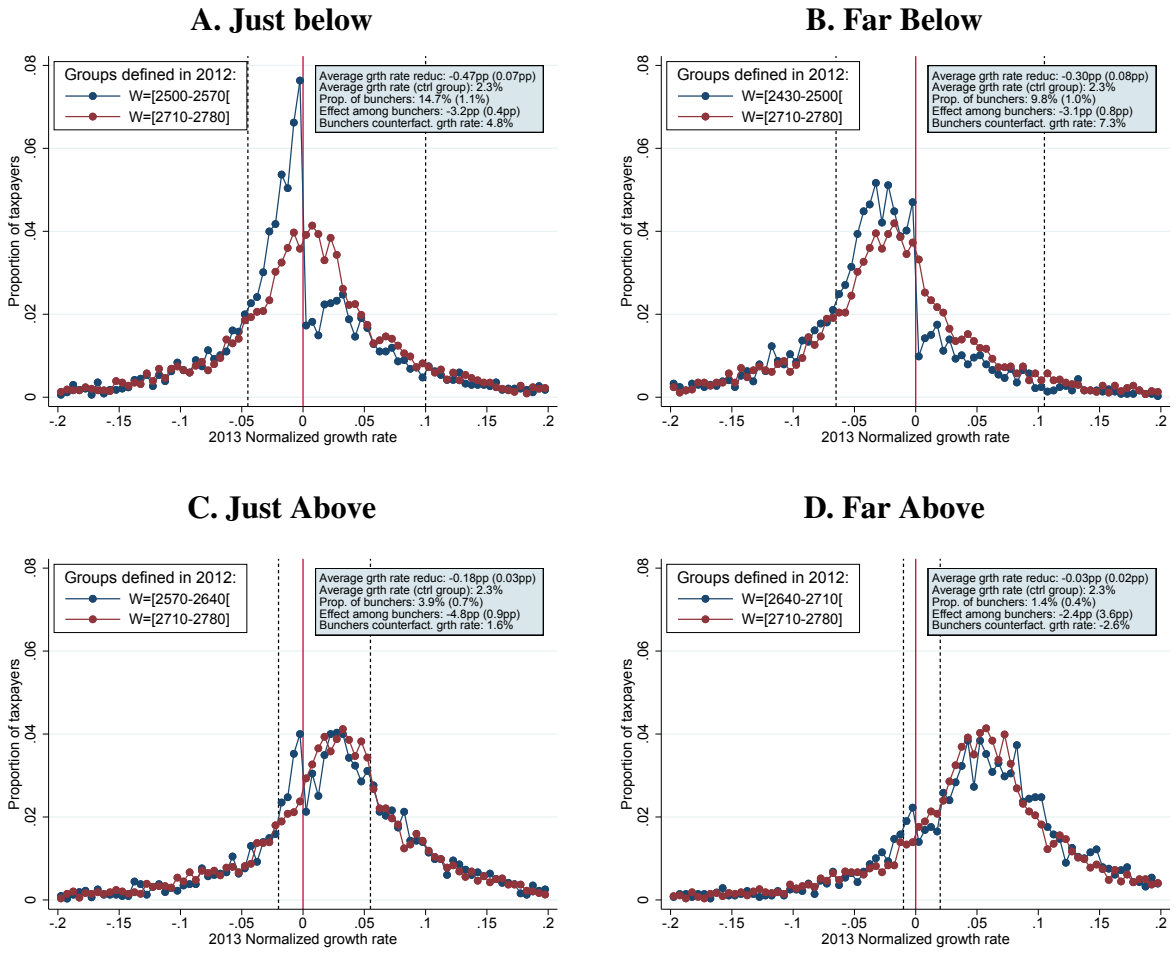
Notes: This Figure plots the distribution of normalized wealth growth rates for households with different levels of taxable wealth in 2012. The definition of normalized growth rate is detailed in the text (see Equation (1)).

Figure A.18: **Pre-reform Growth Rates for Groups Defined in 2012**



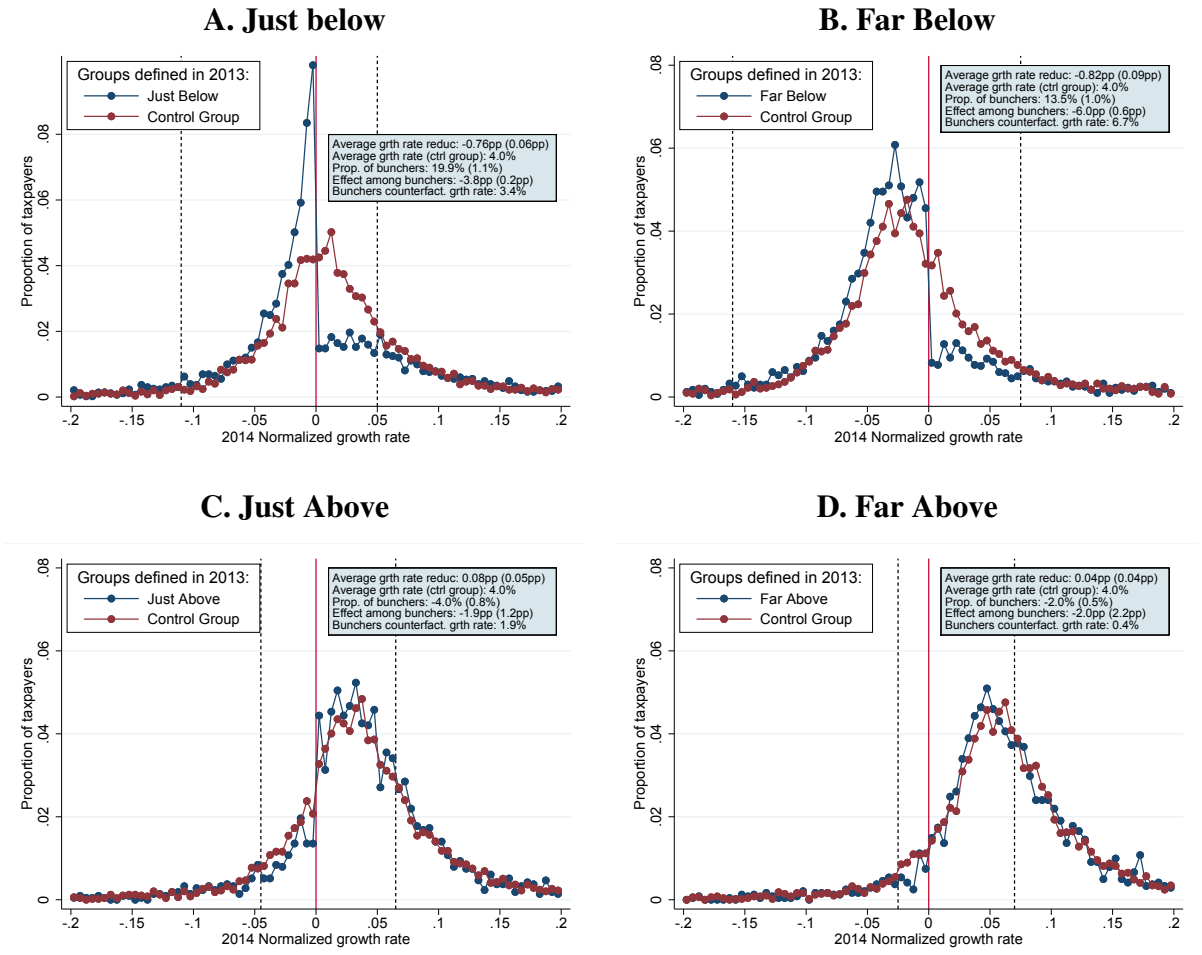
Notes: This figure shows the distribution of wealth growth rates before the 2013 reform, for our treatment and control group (defined in 2012).

Figure A.19: **Robustness checks: Dynamic Bunching using additive instead of multiplicative formulas**



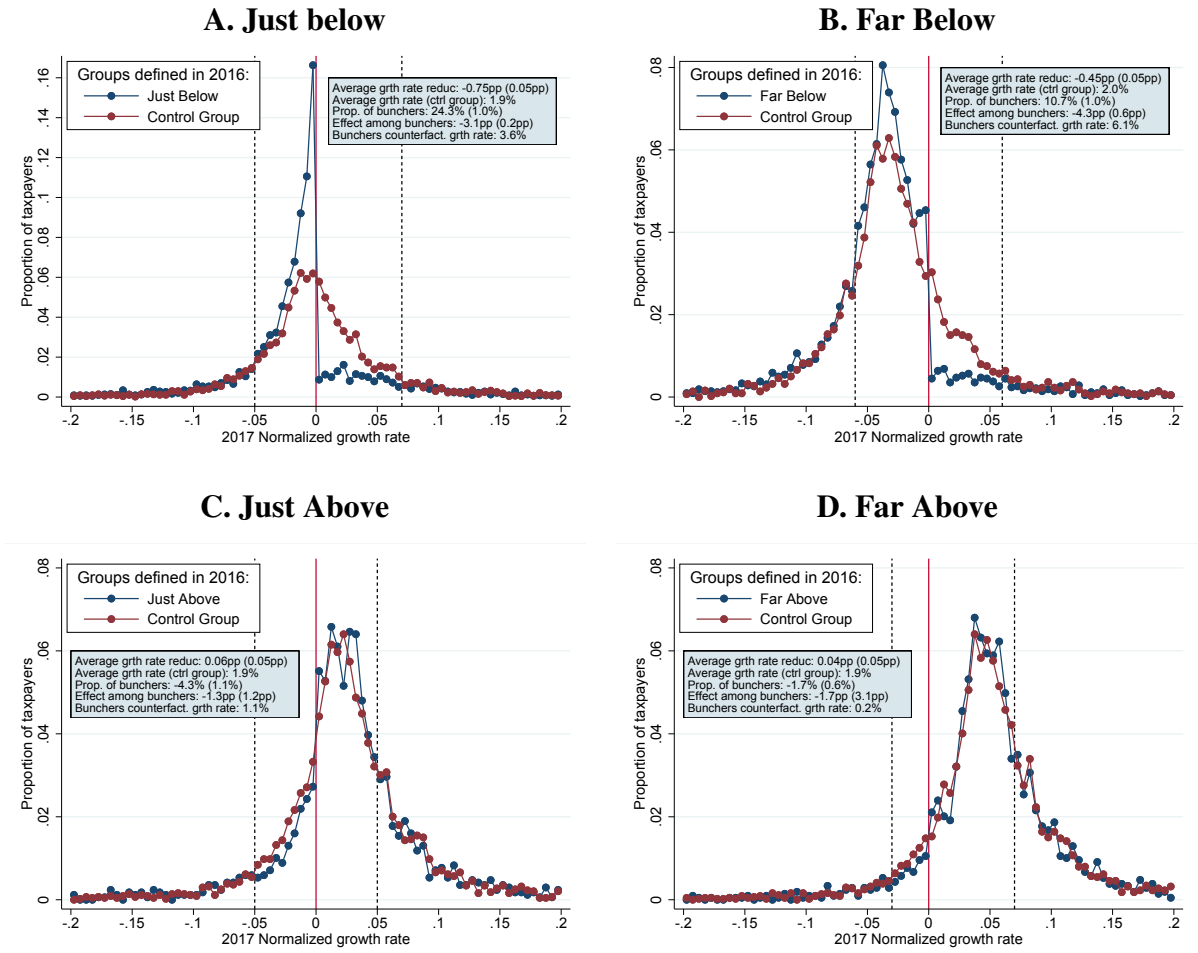
Notes: This figure summarizes our estimates of average and local treatment effects of the simplification reform, using our dynamic bunching analysis described in details in the text. As compared to Figure 8 , we rely on the additive (Equation 3) instead of the multiplicative (Equation 2) formulas, as described by Equation 3

Figure A.20: **Dynamic Bunching for the 2013 Cohort**



Notes: This figure summarizes our estimates of average and local treatment effects of the simplification reform, using our dynamic bunching analysis described in details in the text.

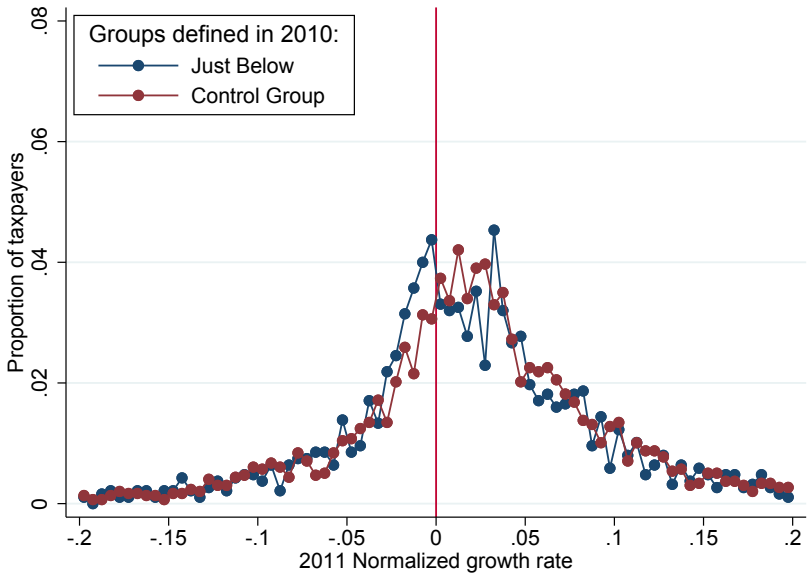
Figure A.21: **Dynamic Bunching for the 2016 Cohort**



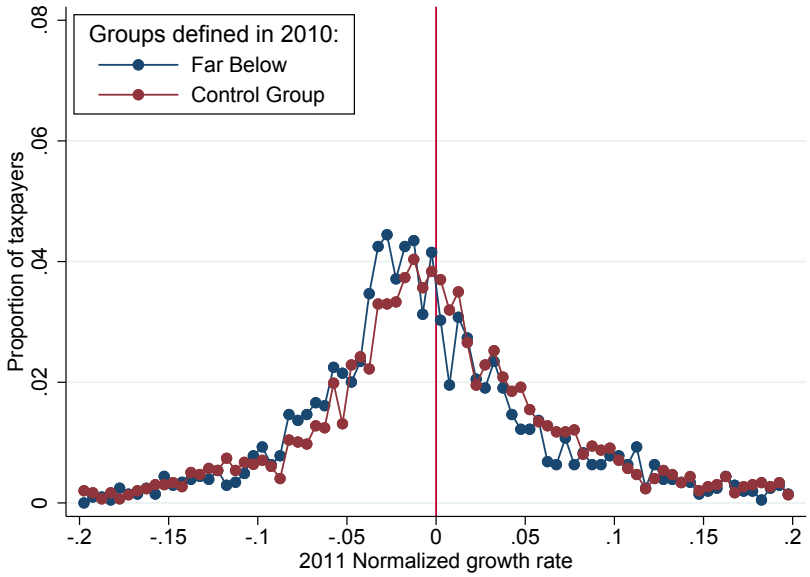
Notes: This figure summarizes our estimates of average and local treatment effects of the simplification reform, using our dynamic bunching analysis described in details in the text.

Figure A.22: **Distribution of 2011-2012 normalized growth rates of treated and control group around the 3,000K simplification threshold**

A.Taxpayers just below the 3,000K threshold in 2010



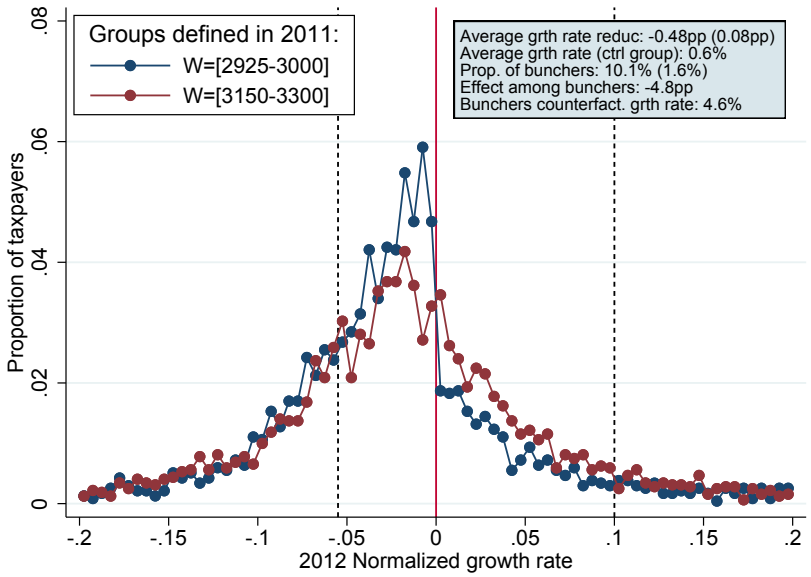
A.Taxpayers just above the 3,000K threshold in 2010



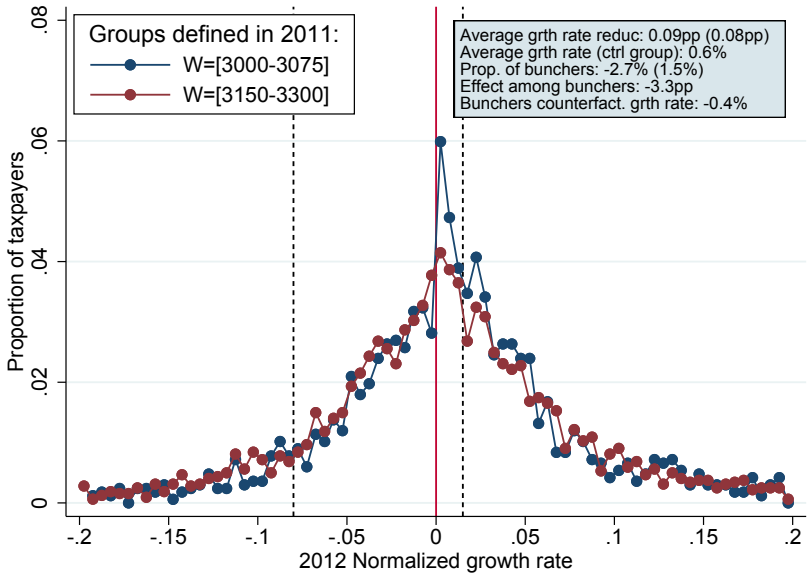
Notes: This Figure repeats our normalized growth rate analysis for the 3,000K simplification threshold.

Figure A.23: **Distribution of 2011-2012 normalized growth rates of treated and control group around the 3,000K simplification threshold**

A.Taxpayers just below the 3,000K threshold in 2011

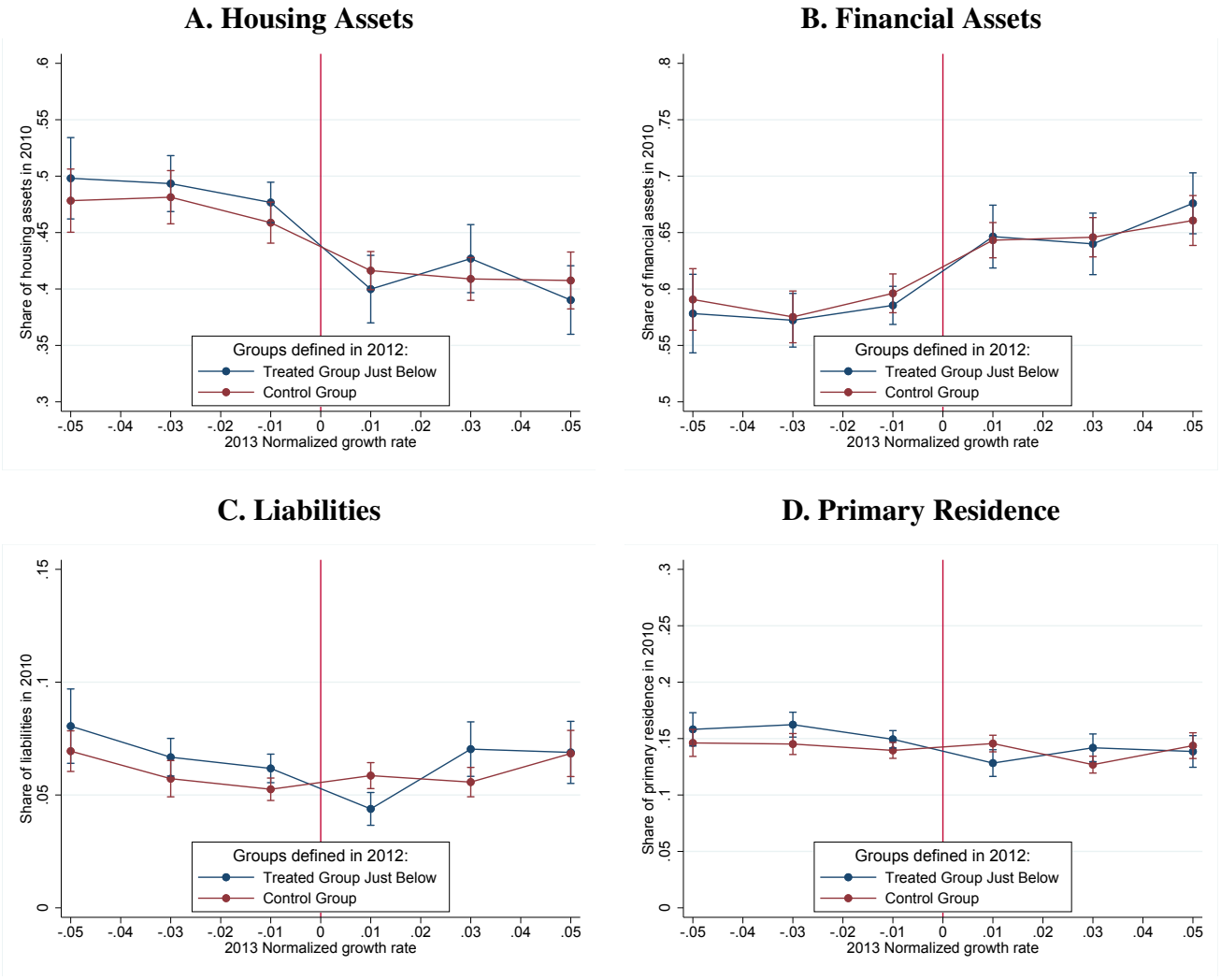


B. Taxpayers just above the 3,000K threshold in 2011



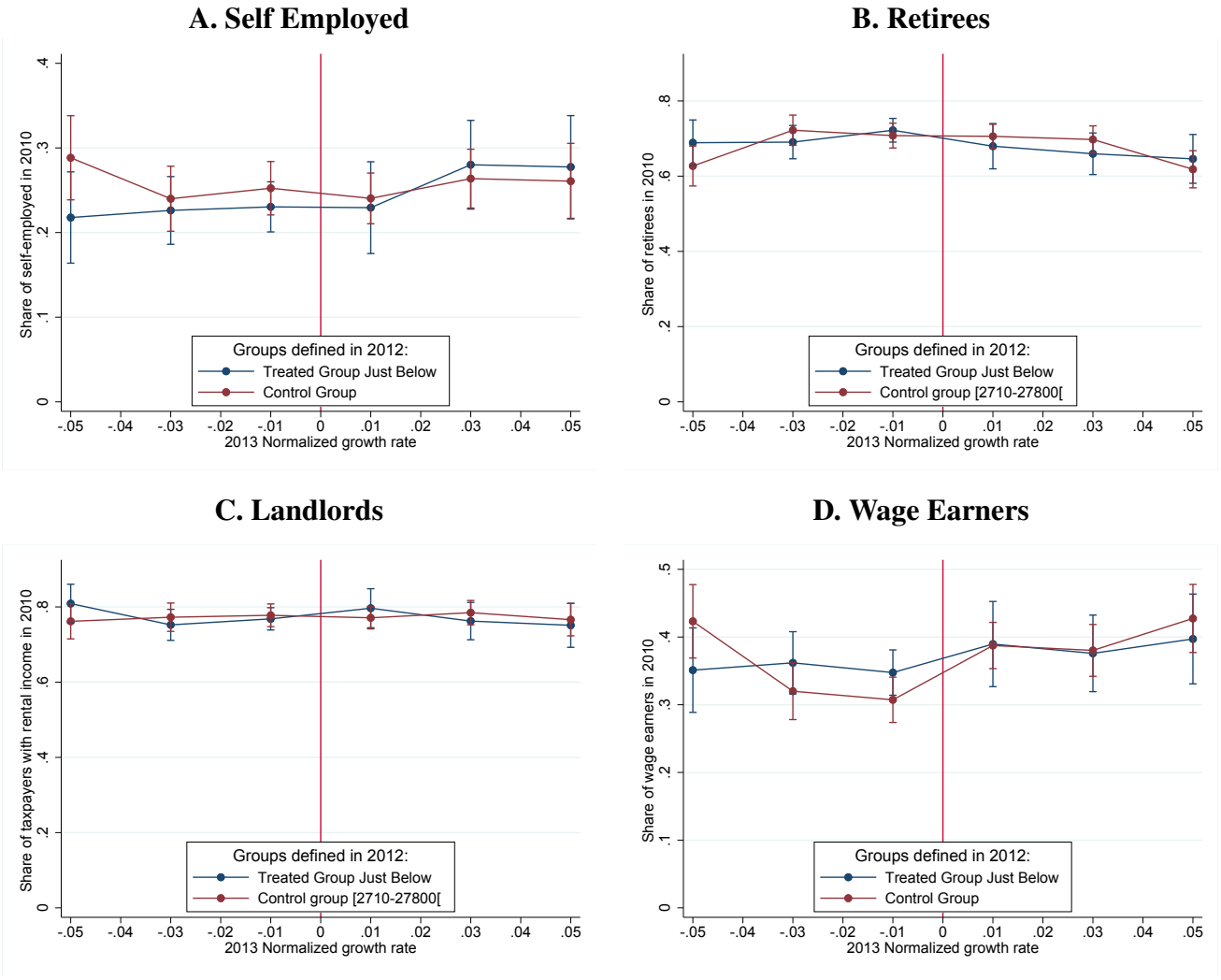
Notes: This figure displays the distribution of normalized growth rates between 2011 and 2012 around the 3,000K simplification threshold implemented in 2011, and removed in 2013. Treatment and control groups are defined in 2011.

Figure A.24: **Differences in wealth composition in 2010**



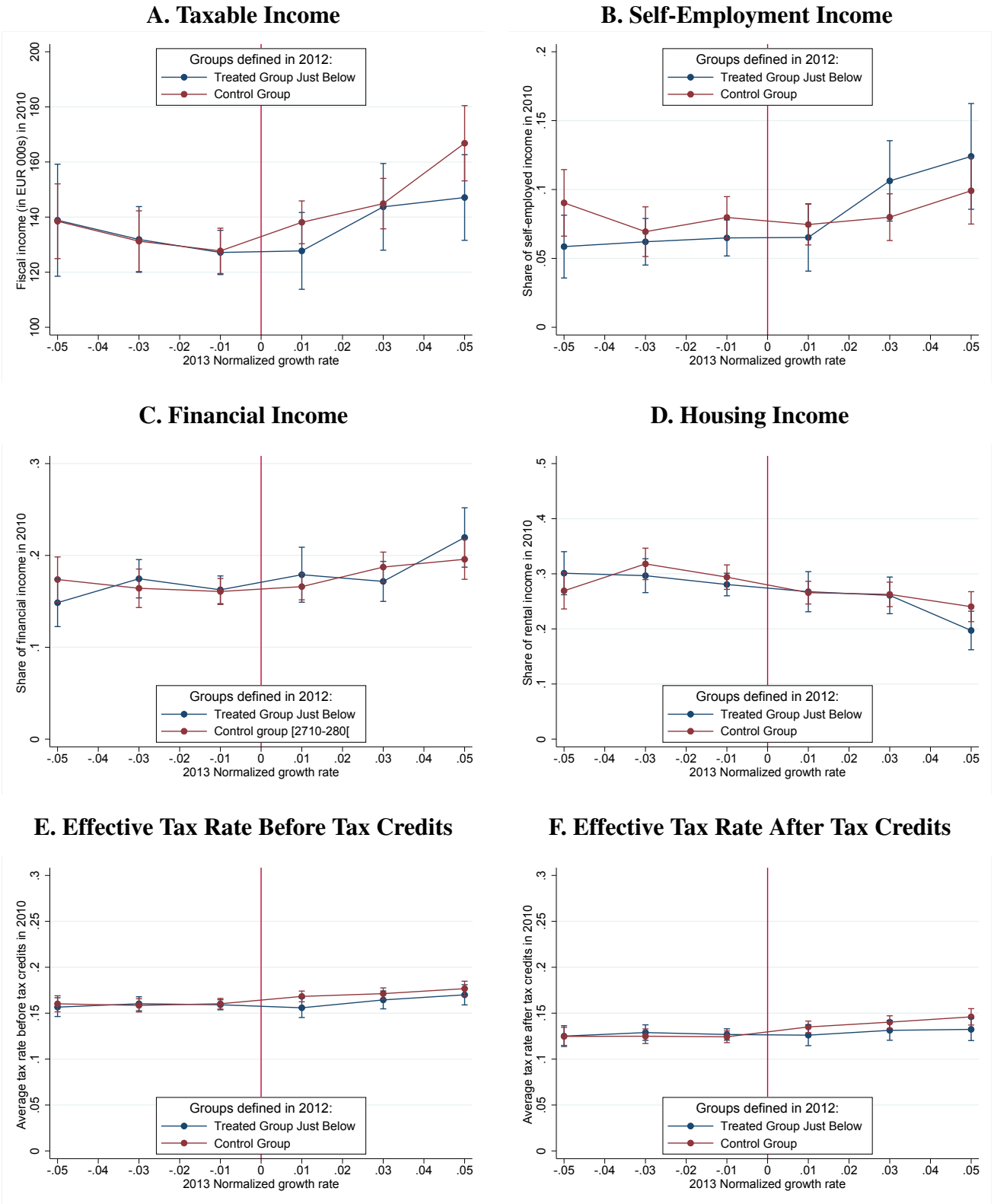
Notes: This figure shows differences in wealth composition in 2010 for our treated and control group, by normalized growth rate defined between 2012 and 2013.

Figure A.25: **Differences in occupation in 2010**



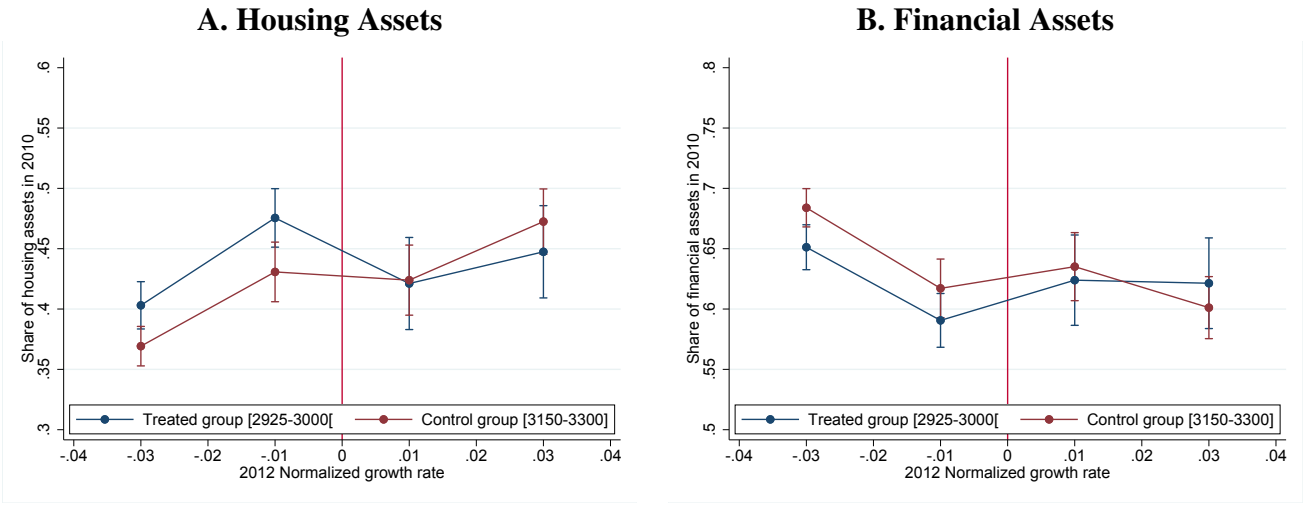
Notes: This figure shows differences in income composition in 2010 for our treated and control group, by normalized growth rate defined between 2012 and 2013.

Figure A.26: **Differences in income composition in 2010**



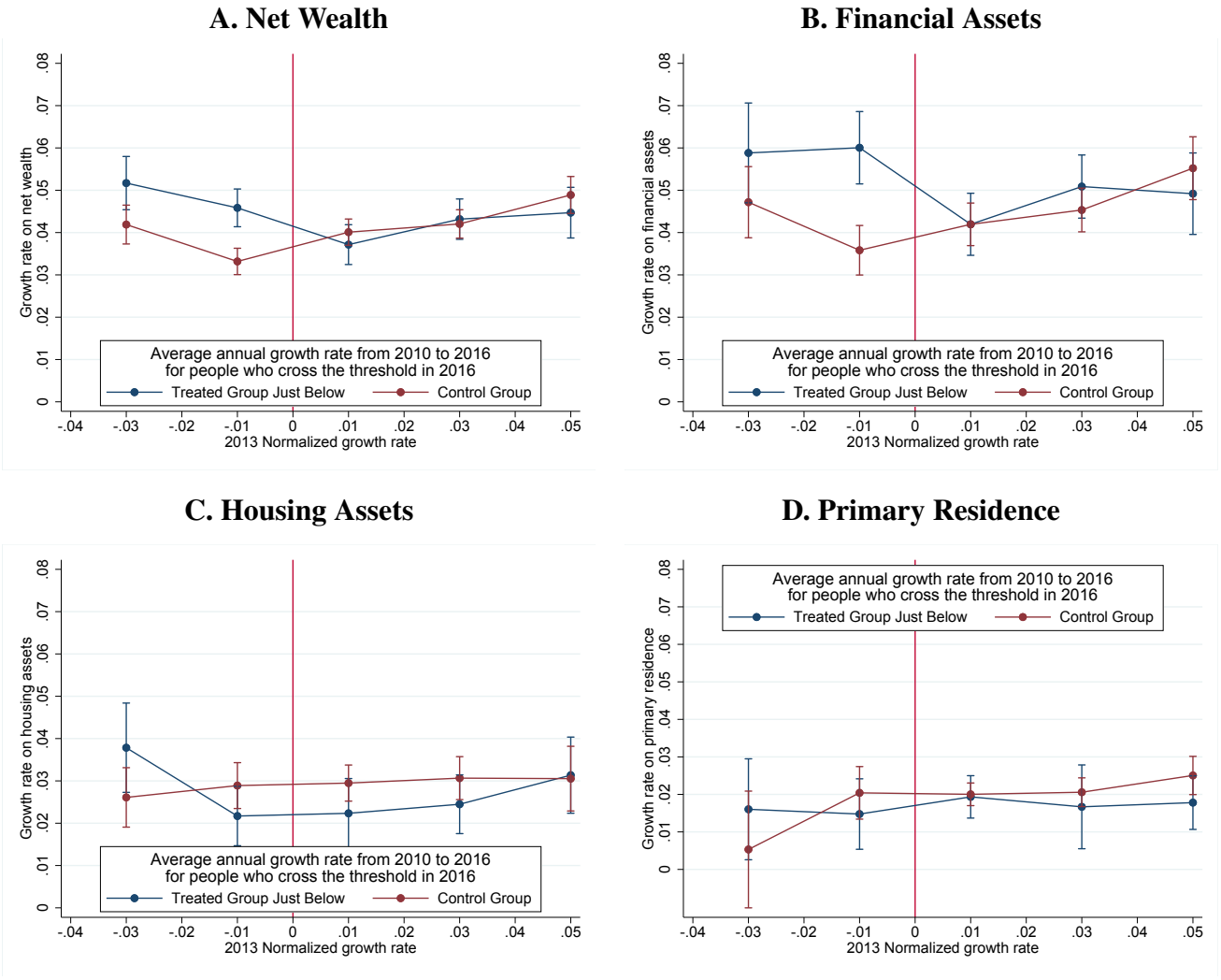
Notes: This figure shows differences in income composition in 2010 for our treated and control group, by normalized growth rate defined between 2012 and 2013.

Figure A.27: **Differences in wealth composition in 2010, Bunchers at 3,000K**



Notes: This figure shows differences in wealth composition in 2010 for our treated and control group (defined with respect to the 3,000K threshold implemented in 2011-2012), by normalized growth rate defined between 2011 and 2012.

Figure A.28: **Average Annual Growth Rate After Crossing the Simplification Threshold, 2016**



Notes: This figure shows the average growth rates in components of taxable wealth from 2010 to 2014, for treated and control individuals defined in 2012, who pass their upper group threshold in 2016. Normalized growth rates are defined between 2012 and 2013.

Table B.1: Descriptive Statistics, all taxpayers in France

	2007	2010	2011	2017
Demographics				
Age	65	66	67	68
% Married	69%	69%	68%	67%
% Non residents	5%	4%	5%	4%
% Retirees	64%	67%	68%	70%
% Wage Earners	40%	38%	38%	38%
% Self-Employed	17%	23%	25%	24%
% Landlords	69%	67%	72%	72%
Incomes & income tax				
Taxable income	91 819	89 668	115 511	129 707
Gross income	129 410	114 487	165 969	163 686
Pension benefits (%)	18%	23%	18%	22%
Wages (%)	25%	28%	24%	26%
Self-employment income (%)	5%	13%	12%	9%
Rental income (%)	14%	17%	17%	16%
Financial income (%)	15%	18%	21%	13%
Other (incl. Capital gains) (%)	22%	1%	8%	13%
Income Tax	21754	17099	26720	28161
Income tax rate (% gross income)	17%	15%	16%	17%
Wealth & wealth tax				
Taxable wealth ('000)	1 716	1 747	2 630	2 813
Wealth tax	45%	46%	.	.
Primary residence (%)	18%	17%	.	.
Financial assets (%)	63%	62%	.	.
Liabilities (%)	8%	8%	.	.
Wealth tax	7 638	6 094	13 268	11 689
Wealth tax rate (%)	0.45%	0.35%	0.50%	0.42%
Wealth tax (total, billion)	4.0	3.6	3.8	4.2
Tax units	526105	590031	287157	356062

B Institutional Appendix

B.1 Assessing the wealth tax base and the wealth tax liability

To assess the wealth tax base and the amount of wealth tax to be paid, households must first assess which of their assets are fully exempted from the wealth, and which of their assets can lead to partial deductions that reduce their effective wealth tax base. Their wealth tax base is then computed using the market value of all assets that do not satisfy the conditions for full exemption and after applying the partial deductions granted for some assets. Next, tax credits and tax ceiling need to be taken into account in order to obtain the final wealth tax payment that is due to the French administration.

Fully exempted Assets Taxpayers must start by assessing which of their assets are fully exempted from the wealth tax, by satisfying the following conditions:

- **Business Assets related to individuals' main occupation**: The first category of fully exempted assets are business assets related to individuals' main occupation. This exemption rule has different conditions and requirements depending on the type of companies.
  - *Sole proprietorship*: all business assets related to individuals' main professional activity are exempted from the wealth tax. For this condition to be satisfied, this activity must be carried on in an "effective and regular" way. If the taxpayer has more than one occupation, his main activity is the one where most of his time is spent. If the activities are similar or complementaries, they are considered as one only activity for the purpose of the wealth tax.
  - *Limited Liability Companies (LLCs)*: For LLCs that are not liable to the corporate tax, the exemption is granted if the company represents the main professional activity of the taxpayer, following the same criteria than described before. In addition, the individual must have a managing position in the company. No additional conditions on capital held is required.
  - *Companies liable to the Corporate Tax*: Assets held in companies subject to the corporate tax are exempted if the taxpayer has a managing position that represents more than 50% of her income and if she holds more than 25% of the overall firm's capital. This second condition is no longer necessary if these shares represent more than 50% of the gross value the taxpayers' total wealth.
- **SME's shares acquired through capital subscription** The Dutreuil Law of 2003 introduced a total wealth tax exemption for shares held in a small or medium sized enterprise (SME), if those shares have been acquired through a subscription to the company's capital rather than on the secondary market. This exemption does not require that the taxpayer has any professional activity in the company.
- **Foreign investments** Any financial investments carried-out by non-residents in France are fully exempted from the wealth tax base.

- **Arts** All artworks, antiques and collection items (for instance old cars) are fully exempted from the wealth tax base.
- **Intellectual property** All property rights are fully exempted from the wealth tax base for inventors and artists.
- **New residents foreign assets** Since 2008, a preferential regime allows "impatriates" to be fully exempted from the wealth tax on their wealth located abroad for a 5-years duration (8 years since 2017). The preferential regime applies to new residents who have not been tax residents in France for the past 5 years preceding their change of residence. This can apply to French citizens if they satify those conditions.

Tax deductions Next, taxpayers must take into account the deductions that reduce their effective wealth tax base for the assets that satisfy the following conditions:

- **Main residency** 30% of the value of a household's main residence is exempted from the wealth tax and can be deducted from the tax base.
- **Shareholders agreements** Shareholders who commit to held their shares for a certain duration can deduct 50% (75% since 2006) of those shares from their wealth tax base. To benefit from this tax deduction, the shareholders must have agreed to retain their shares for 6 years, collectively hold at least 20% of the voting rights or 34% of all shares and one of them must be the manager of the company for at least 5 years after the agreement.
- **Employees ownership** Since 2006, employees who own shares in the company where they are employed can deduct 75% of those shares from their wealth tax base. To benefit from this tax deduction, they must hold those shares for at least 6 years. Retirees who previously worked in the company and held the shares for at least 3 years before retiring can also benefit from this tax deduction.
- **Wood, forests and rural properties** Taxpayers who commit to hold and manage wood, forests and long-term leased rural property for at least thirty years can deduct 75% of the market value of those assets from their wealth tax base.
- **Debts** All private debts evaluated in a given year can be deducted from the wealth tax base, but those debts can only be related to assets that are not exempted from the wealth tax. For instance, debts related to business assets and business activity cannot be deducted from the wealth tax base. Eligible debts are deductible in proportion to the fraction of the taxable value of the assets to which they relate (Dupas (2020)).

Tax credits All assets that do not satisfy the conditions for fully exempted assets and partial deductions listed before are included in the wealth tax base. Once taxpayers have self-assessed their wealth tax base, they must assess their tax credits:

- **Charitable giving**: Taxpayers can obtain a tax credit of 50% of their charitable giving to entities recognized as being of public utility by the government. This tax credit cannot exceed 50,000 euros per year.

- **SME's investment**: Since 2008, taxpayers can obtain a tax credit of 50% of their investment in SMEs. The reduction for SME investment adds to the full exemption of SMEs shares acquired through capital subscription. [20] The tax credit for SME investment cannot exceed 45,000 per year.

Note that the yearly cap for tax credits is evaluated for both charitable giving and investment in SMEs. If taxpayers want to combine tax credits for SME investment and charitable giving simultaneously, the joint yearly cap is 45,000 euros.

Tax ceiling After assessing their total liability to the wealth tax, accounting for exemptions, deductions and tax credits, taxpayers can benefit from the ceiling of their wealth tax. The wealth tax ceiling (*plafonnement*) was introduced in 1989 and establishes that the total amount of taxes paid by an individual for the wealth tax and the income tax in a given year cannot exceed 85% of the total net taxable income received the year before (75% since 2013).[21] From 1996 to 2013, the amount of wealth tax reduction granted by the ceiling mechanism could not exceed 50% of the initial wealth tax amount for individuals with taxable wealth above a certain threshold.[22] In 2013, the government reintroduced a version of the wealth tax ceiling without the cap.

B.2 Definition of tax unit and territoriality

The wealth tax base is defined at the tax unit leve by summing up all worldwide assets, net of debts, owned by French tax residents. The tax unit includes married couples, civil partners (under a civil partnership), partners in a public cohabiting relationship as well as minor children. Married couples are allowed to be taxed separately if they are in the process of separation or divorce and live separately.

Tax residency for the purpose of the wealth tax is defined at the individual, not the tax unit level. An individual qualifies as a French tax resident as at 1 January of a given year if: (i) the individual has his "home" in France or (ii) the individual has the centre of his economic interests in France.

For French tax residents, the taxable base includes all taxable assets (as defined above) located in France and outside France. For non-residents, the taxable base is limited to assets located

[20] This means that since 2008, taxpayers can benefit from a tax credit equal to the value of her contribution in the SME upon the year of subscription, on top of the full exemption of the shares invested from the wealth tax base. A direct investment in a SME satisfying the condition for capital subscription thus leads to both full exemption of the shares but also to a wealth tax credit the year of the investment.

[21] Income taxes include both the progressive income taxes and other flat income taxes (CSG and CRDS), as well as a variety of small payroll taxes paid on capital income.

[22] More specifically, if wealth<2.45 taxpayers can benefit from fully capped mechanism, if wealth<3.62 and >2.45 the reduction is limited to 11,160 euros and if wealth>3.62 it is limited to 50% of initial ISF.

in France, with the exception of financial assets that are fully exempted from the wealth tax.[23] Additionally, some bilateral tax treaties grant wealth tax exemptions to non-residents from specific countries. For instance, residents from Gulf countries are exempted from the wealth tax on their asselts held in France if they own enough financial securities in France.

B.3 Valuation of assets

There is no third-party reporting for the wealth tax in France. The assets included in the wealth tax base must be valued each year at their market value by the taxpayer. When the assets include shares of a company, the taxpayer should obtain information on the valuation of those shares from the company. The tax administration also provides official guidelines to taxpayers for the market value assesment of their shares in unlisted companies and other companies. For real estate, there is an online official database providing sale prices, square metres for properties located and sold in France, that can be used to assess the value of real estate assets. For jewelry, cars, horses, planes and boats, the valuation must be based on the public sale prices for similar goods that occured one to two years before the reporting year.

B.4 Reporting requirements and timing

The net value is evaluated on the 1st of January of year t for fiscal year t. Thus, in calendar year t, taxpayers fill out their income tax return and pay their income tax for income earned in year $t-1$, but fill out their wealth tax return and pay a tax based on the value of their wealth on January 1st of year t. Households must send their filled wealth tax return and payment (by check or bank transfer) to the tax authorities by mid June of each year. For individuals who are below the simplification threshold, the payment of the wealth tax can be made at the end of August of the same year. Late payment automatically triggers a penalty of 10%. The simplified form can be filed as part of the appendice of the income tax return starting in 2012.

[23] See article 885 du code général des impôts (CGI). To be exempted from the French wealth tax, financial assets held by non-residents must be linked to a company located in France.

Table B.2: **Wealth Tax Schedule**

	Wealth Bracket	Rate (%)	Exemption (Thousands)	Simplified Form
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	790K	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
	[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
	[1,300-2,570[	0.70		
	[2,570-5,000[	1		
	[5,000-10,000[	1.25		
	[10,000[	1.5		

Table B.3: **Reporting Requirements for Wealth Taxpayers in France**

	Regular Form	Simplified Form
Tax exemptions		
Taxpayer has exempted professionnal assets	Y	N
Name, activity and tax ID of the company of main activity	Y	N
Names, a ctivities and tax IDs of held companies	Y	N
Profession in held companies	Y	N
Share of capital owned in held companies	Y	N
Capital share representing more than 50% of taxable wealth	Y	N
Capital share after takeover by employees	Y	N
Holding shares after SMEs capital buyout	Y	N
Taxable assets decomposition		
Real estate, main residence (address + characteristics+value)	Y	N
Real estate, other buildings (address + characteristics+value)	Y	N
Forests	Y	N
Rural lands	Y	N
Agricultural lands	Y	N
Shares owned with 6 years holding clause	Y	N
Shares owned by employees	Y	N
Other financial assets	Y	N
Liquid assets	Y	N
Tax deductions		
75% deduction for forests (+ proofs)	Y	N
75% deduction for 6 years holding clause (+ proofs)	Y	N
75% deduction for shares owned by employees (+ proofs)	Y	N
Liabilities (+ proofs)	Y	N
Tax credits		
Direct investment in SMEs*	Y	Y
Investment in SMEs through holdings (FIP/FCPI)*	Y	Y
Charitable giving*	Y	Y
Tax ceiling		
Income taxes paid	Y	N
Amount of capped wealth tax	Y	Y
Gross and Net Taxable Wealth		
Net Taxable Wealth	Y	Y
Gross Taxable Wealth	Y	Y

Notes: *components for which taxpayers filling the regular form must attach proofs, while taxpayers filling the simplified form do not have to attach proofs.

C Static Bunching Computations

This section details analysis of bunching at the kink point created by the 2,530K marginal tax rate threshold in the French wealth tax. in 2010. In 2013, the threshold was increased to 2,570K and became associated with a change in reporting requirement. Figure A.9 presents bunching evidence for the full population, for years 2010, and 2013-2017. We plot the observed distribution around the "kink" in bins of 10, 000 euros in blue and the counterfactual distribution absent the kink in pink. The counterfactual distribution is obtained by fitting a polynomial to the observed distribution, excluding data in a range around the kink and extrapolating the fitted distribution to the kink. We use a polynomial of order 7 as the baseline, but our estimates show very little sensitivity to this choice. To fit our polynomial, we choose the lower bound manually and determine the upper bound based on the methology described in (Kleven, 2016). The upper and lower bounds are plotted with the vertical dotted black lines in Figure A.9.

For year 2010, the 2,530K threshold is associated with a change in marginal tax rate only (pure kink). For that year, we therefore use the methodology for kinks and choose the upper bound visually. We then compute the excess mass B at the kink as the difference between the observed and conterfactual distribution in the entire excluded range.

For years 2013-2017, the 2,570K threshold is associated with both a change in marginal tax rate (kink) and a change in reporting requirements (notch). We follow the methodology for notches to compute the excess mass. We define the excess mass B as the difference between observed and counterfactual distribution in the left side of the excluded range (below the threshold). We choose our upper bound such that the excess mass equals the missing mass right to the threshold.

The estimated parameters are plotted in Figure A.9 and summarized in Table B.4. We also report b that we define as the total excess mass computed as described before, scaled by the height of the counterfactual distribution at the threshold. This parameter can interpreted as the number of bins by which bunchers are moving on average (Jakobsen et al., 2020). As showed by Saez (2010), this statistic is proportional to the compensated elasticity in the presence of a pure kink.

Table B.4: **Parameters Estimates from Static Bunching**

Year	Excess Mass (B)	b	$d\tau$
2010	46	0.08	.25%
2013	1,952	2.74	.30%
2014	2,348	3.07	.30%
2015	2,163	2.64	.30%
2016	3,124	3.68	.30%
2017	3,865	4.49	.30%

Notes: This table reports the estimated parameters from the static bunching analysis using the counterfactual distribution plotted in Figure A.9 as detailed in the text. The parameter b is the total excess mass around the kink (B) scaled by the average height of the counterfactual distribution at the kink.

D Missing Taxpayers at Exemption Thresholds

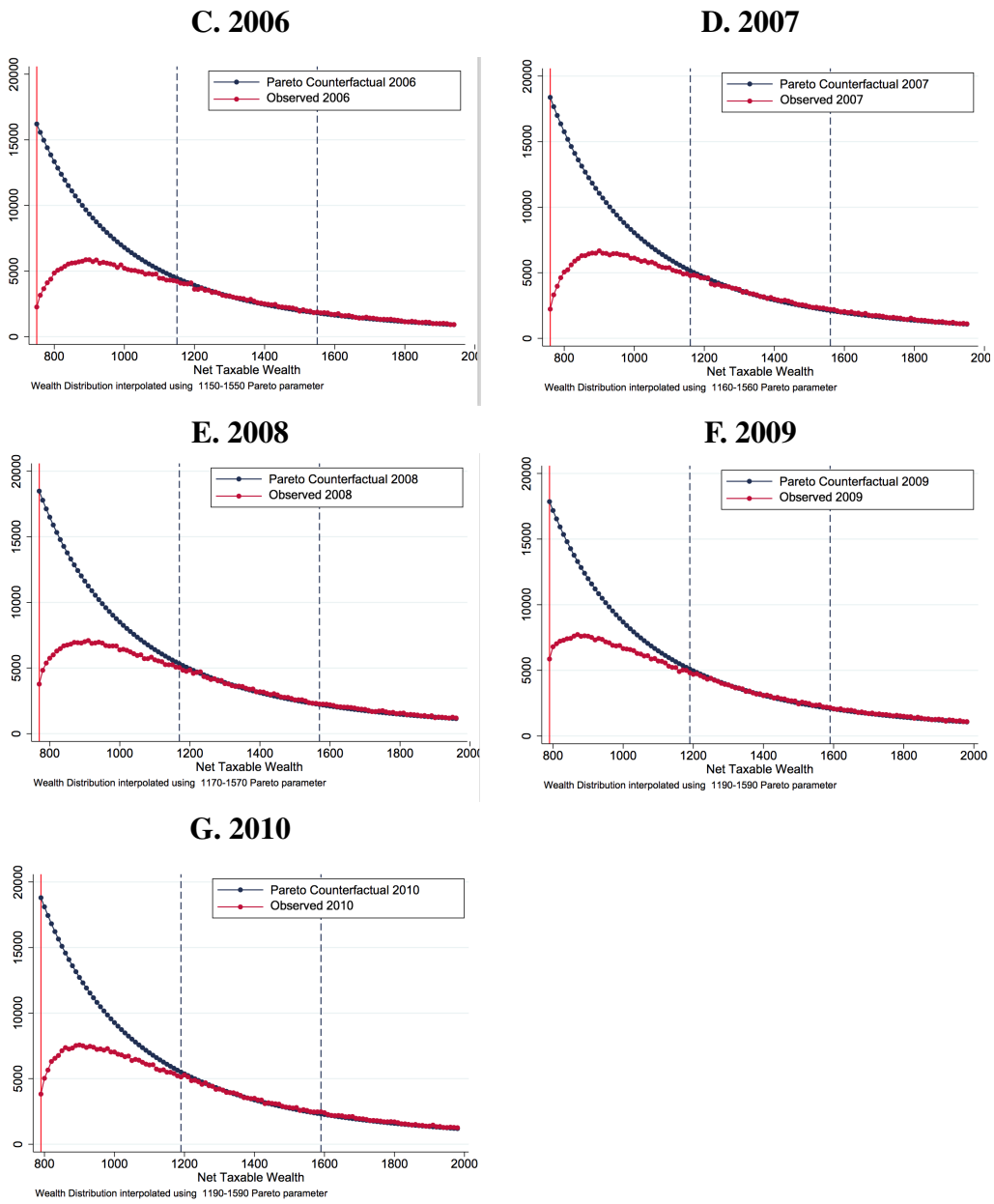
This section describes the methodology used to impute counterfactual wealth distributions around the exemption thresholds.

To build counterfactual wealth distribution, we use the parametric properties delivered by the Pareto distribution assumption. It has been well documented that the top of the wealth distribution follows a Pareto distribution. As the French wealth tax covers the top 1% of the taxable wealth distribution, this extreme tail assumption can be made to extrapolate net taxable wealth of individuals above the exemption threshold. A Pareto distribution has the following form : $f(y) = a\frac{k^a}{y^{a-1}}$. If we assume that the distribution of wealth is Pareto distributed, we can then estimate the parameters a and k of the Pareto distribution for the wealth bracket $[s_i, s_{i+1}]$. Our method is based on the survival distribution function $p(y) = (k/y)^a$ and relies on the number of households and the threshold of each tax brackets.The parameters a et k are estimated by solving the two equations $k = s_i.p(s_i)^{1/a}$ and $k = s_{i+1}.p(s_{i+1})^{1/a}$ where $p(s_i)$ is the fraction of households above the threshold s_i. Solving the system gives:

$$\begin{cases} a_i = \dfrac{\log \frac{p(s_{i+1})}{p(s_i)}}{\log \frac{s_i}{s_{i+1}}} \\ k_i = s_i.p(s_i)^{1/a_i} \end{cases} . \tag{8}$$

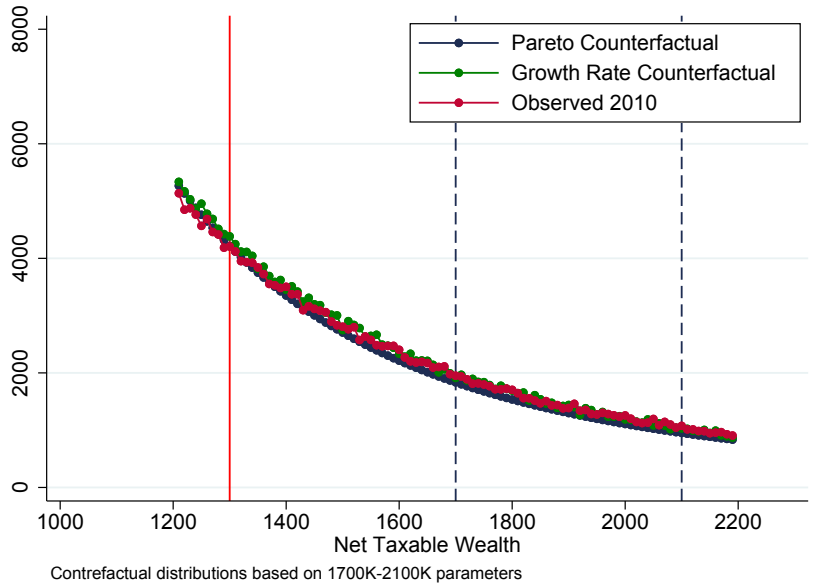
We use those equations to infer the distribution of taxable wealth in segments affected by the exemption threshold, using the pareto parameter a from unaffected segments.

Figure A.29: **Counterfactual and Observed Distributions at Exemption Threshold**



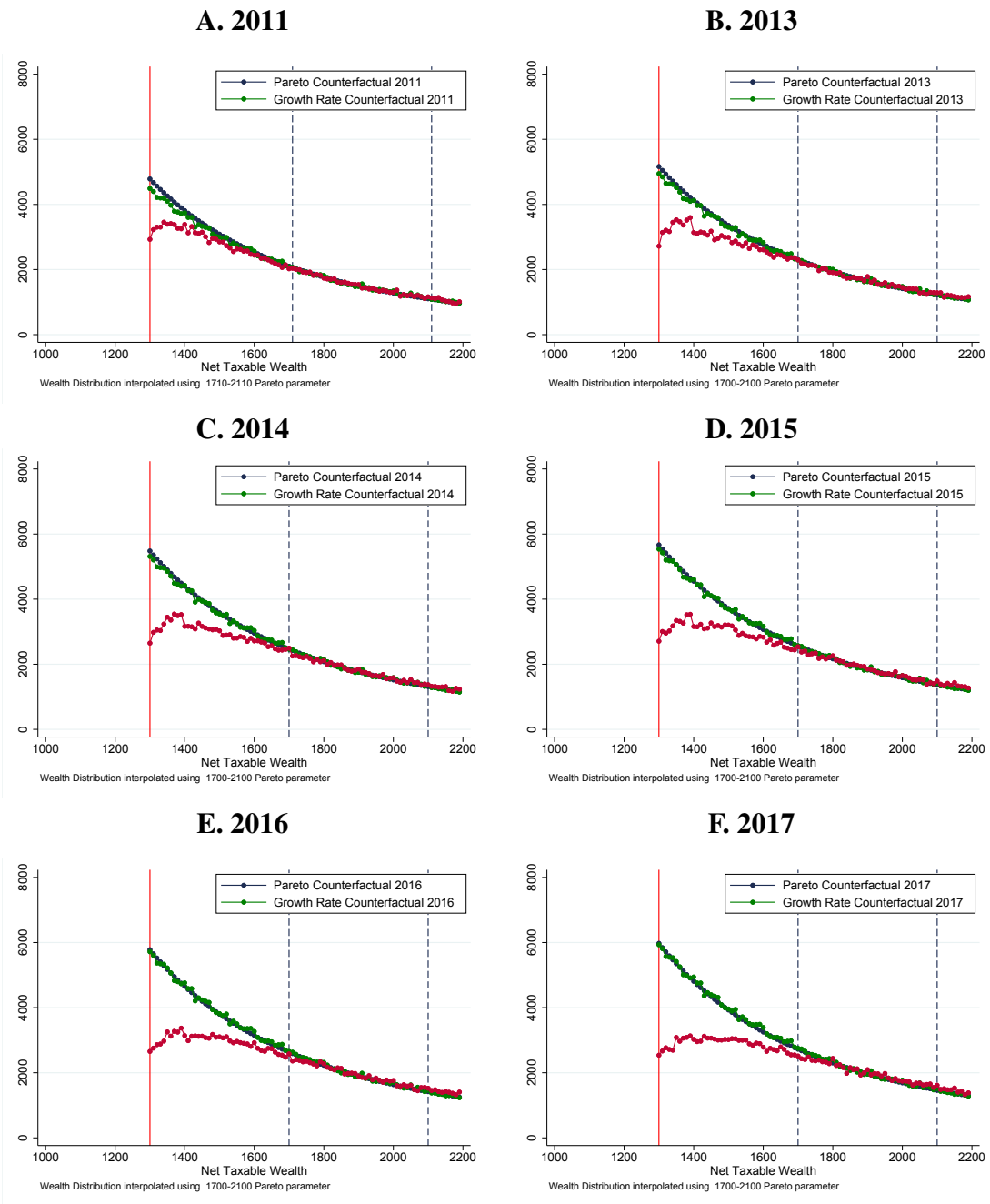
Notes: This Figure shows observed and counterfactual wealth distributions around the exemption threshold between 2006 and 2010. Taxpayers self-assess their exemption to the wealth tax, and file a wealth tax return only if their taxable wealth is above the exemption threshold. If their taxable wealth level is below the exemption threshold, they do not disclose any information regarding their taxable wealth. Counterfactual distributions are extrapolated using Pareto parameters in the segment of the wealth distribution not distorted by misreporting at exemption threshold, denoted by dashed blue lines. The wealth tax schedule over the period is summarized in details in Table B.2.

Figure A.30: **Empirical Strategy Validation for 2010 Placebo Year**



Notes:This Figure shows the prediction of the 2010 distribution using our main methodology. The Pareto prediction method uses the average Pareto parameter in part of the distribution that is unaffected by the exemption threshold to extrapolate the full wealth distribution. The growth rate method uses the average 2009-2010 growth rate in the number of taxpayers in the part of the distribution that is unaffected by the exemption threshold and applies it to the observed 2009 distribution. The blue dashed lines denote the part of the unaffected part of the distribution used to implement these two methodologies.

Figure A.31: **Counterfactual and Observed Distributions at Exemption Threshold**



Notes: This Figure shows observed and counterfactual wealth distributions around the exemption threshold between 2011 and 2017. Taxpayers self-assess their exemption to the wealth tax, and file a wealth tax return only if their taxable wealth is above the exemption threshold. If their taxable wealth level is below the exemption threshold, they do not disclose any information regarding their taxable wealth. Counterfactual distributions are extrapolated using Pareto or average growth rate paramters in the segment of the wealth distribution not distorted by misreporting at exemption threshold, denoted by dashed blue lines. The wealth tax schedule over the period is summarized in details in Table B.2.

Table B.5: **Missing Taxpayers At Exemption Thresholds**

Year	Bracket	Missing Taxpayers	% Taxpayers
Panel A: Exemption Threshold			
2006	760-1200	155208	41.3
2007	770-1200	179597	42.2
2008	790-1200	166754	38.9
2009	790-1200	134686	33.5
2010	790-1200	162116	37.8
2011	1300-1700	6078	5.1
2013	1300-1700	16406	12.4
2014	1300-1700	24440	17.1
2015	1300-1700	30816	20.5
2016	1300-1700	42395	26.4
2017	1300-1700	50478	30.4

Notes: This Table summarizes estimated missing number of taxpayers around the exemption thresholds in the wealth tax schedule, using our predicted couterfactual distribution. based on Pareto interpolation.