WEALTH TAXATION AND PORTFOLIO ALLOCATION

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Abstract

Wealth taxes are back on the policy agenda globally, raising a fundamental question about their design: should all assets be taxed uniformly? The answer depends crucially on cross-elasticities between asset classes, for which evidence remains scarce. This paper estimates the cross-elasticity between the two main components of household wealth—financial and real estate assets. In 2017, France transformed its wealth tax into a real estate tax, effectively eliminating taxation of financial wealth. Using comprehensive linked administrative income and wealth data, I study this reform by comparing the responses of French residents to those of non-residents, who remained subject to the wealth tax but were unaffected by the reform. I find clear reallocation from real estate to financial assets, yet the implied cross-elasticity is modest. Absent rebalancing, wealth tax revenues would have been only 9%-13% higher. Three mechanisms help explain this limited response: the consumption value of housing—even among the wealthiest households—limited scope for tax avoidance, and portfolio diversification motives. These findings suggest that a well-designed progressive tax on housing wealth can raise substantial revenue, even at the top.

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1 Introduction

Debates among researchers on the desirability and the enforceability of wealth taxes are old (Judd, 1985; Chamley, 1986) and still ongoing (Piketty, 2013; Saez and Zucman, 2019; Kopczuk, 2019). A growing empirical literature studies behavioral responses to wealth taxation in order to shed light on the pros and cons of using this tax instrument. Yet, the desirability of a wealth tax depends critically on its design—a dimension that has received surprisingly little attention in the literature.

In particular, a central question in the public debate is how to design the tax base. In practice, existing wealth taxes are rarely uniform—offering, for instance, preferential treatment for business assets or retirement savings and taxing immovable property separately. Governments may have several reasons for such differentiation, including taxpayers' liquidity constraints, heterogeneous asset-specific elasticities, or the presence of externalities. At the same time, differential taxation across assets creates opportunities for tax arbitrage, which can substantially erode the revenue-raising potential of a wealth tax.[1] How households allocate their portfolio in response to wealth tax differentials—captured by asset cross-elasticities—are key to informing these discussions. Yet, due to data limitations and the difficulty of finding compelling sources of identifying variations, such responses have largely been overlooked in the empirical literature.

This paper tackles this question by focusing on the effect of differential wealth taxation between perhaps the two broadest asset class categories: real estate and financial assets. To study this question, I leverage administrative data on wealth and income from France and a major wealth tax reform introduced in 2017 that transformed the French wealth tax into a real estate tax. A key element of the French institutional context is that foreign individuals who are non-residents for tax purposes but hold assets in France were subject to the wealth tax, yet benefited from a full exemption on their financial investments both before and after 2017. As a result, the wealth tax base for non-residents consists solely of their French real estate holdings throughout the period and the reform does not affect their relative incentives to hold housing vs. financial assets. This feature of the French tax system offers a well-defined control group, allowing me to estimate the response to the reform by comparing French residents to non-residents in a difference-in-differences setting.

The paper is divided into three main parts. First, I estimate how taxpayers' portfolio responded to the 2017 reform by studying wealth taxpayers' real estate holdings. Importantly, this reform removed all financial assets from the wealth tax base while leaving other features of the tax schedule unchanged. In particular, the reform did not increase the wealth tax rate on real estate; thus, incentives to hold this asset are reduced only *relative* to financial assets and there is little reason for taxpayers to adjust their level of taxable real estate through under-reporting, tax avoidance or other motives unrelated to portfolio rebalancing.[2] Importantly,

[1] See Bastani and Waldenström (2023) for a discussion of uniform vs. differential taxation of assets.

[2] I do not claim that wealth taxpayers do not under-report their assets or engage in offshore evasion or avoidance, but rather that

the real estate tax base after the reform is comprehensive and includes housing assets held both directly and through a corporate vehicle. As a result, a decrease in taxable real estate reported by French taxpayers should be interpreted as a decrease in the amount of real estate held rather than as a change in the way they hold this asset type. My empirical strategy focuses on households whose pre-reform real estate exceeds the exemption threshold—1.3 million euros—and who would therefore remain liable to the wealth tax after the tax change in the absence of any response. The treatment group consists of French wealth taxpayers for whom real estate becomes relatively less profitable while the control group is composed of non-residents wealth taxpayers. Both groups report comparable average levels of housing wealth to the French tax authority before the reform.

Treated taxpayers reduce their real estate holdings immediately after the reform is implemented, and continue to do so in the following years. My benchmark difference-in-differences estimate shows that, five years after the reform, French taxpayers hold on average 5% less housing wealth compared to the pre-reform period. Since financial assets are no longer reported after the reform, I also rely on capital income, which remains taxed, to corroborate the rebalancing responses. Consistent with this, treated households receive less rental income and more dividend income after the reform. Crucially, using non-residents as a counterfactual helps control for general equilibrium effects on house prices, ensuring that the observed changes reflect adjustments in quantities held rather than price fluctuations. Since taxpayers are unlikely to respond to the reform by selling their primary residence, I also construct an alternative control group of French taxpayers whose pre-reform housing wealth consists primarily of their primary residence, and find similar results.

A threat to identification is that the housing stock held by non-residents may not follow the same dynamics as that of French wealthy taxpayers. I address this by constructing separate house price indices for both groups using a dataset on all French dwellings and their owners (Lei et al., 2025),[3] and show that average house price inflation was nearly identical across groups over 2013–2022, supporting the validity of the control group. A second concern is that the reform led to a sharp contraction in the wealth tax base, potentially generating revenue effects that could independently influence wealth accumulation (Ring, 2024). I show that the rebalancing response does not vary systematically with income, wealth, or predicted fiscal gain, alleviating concerns that income effects are strongly confounding the estimates.

Second, to assess the economic significance of the reallocation, I convert it into a cross-elasticity. The baseline cross-elasticity concept used in this paper is in fact a cross-*semi*-elasticity, which relates changes in reported real estate to changes in the wealth tax differential between real estate and financial assets. This differs from the standard approach in the optimal tax literature, which expresses changes in a tax base as

these behaviors are likely orthogonal to the reform.

[3]This dataset cannot be linked to wealth tax returns for legal reasons. I proxy wealth-tax-liable property owners as those with total gross housing wealth exceeding one million euros.

a function of the net-of-tax rate on an alternative base (Saez and Stantcheva, 2018; Lefebvre, Lehmann and Sicsic, 2025), and is closer to the approach used in the household finance literature (Guiso, Fagereng and Ring, 2024). I adopt this convention to make explicit that it is the *tax differential* between real estate and financial assets that drives portfolio choices, but because the change in the tax differential leveraged in this paper primarily comes from a decrease in the tax rate on financial assets and because the wealth tax rate is around 1%, the standard approach leads very comparable estimates.[4] The baseline cross-elasticity is equal to (minus) 4.7, suggesting that 4.7% of taxable real estate is reallocated towards financial assets in response to a 1 percentage point increase in the wealth tax rate differential between the two asset classes.[5]

How large is a cross-elasticity of 4.7? I answer this question in two ways. First, I situate it within the broader literature by reviewing existing estimates of portfolio rebalancing responses to tax differentials found in the public finance and finance literature, and translate them, when feasible, into cross-elasticities comparable to the one estimated here. Most of the literature focuses on substitution across financial assets—such as equities, pension accounts, or business assets. These estimates display substantial heterogeneity, ranging from 1 to 125. Against this backdrop, the cross-elasticity estimated in this paper—around 5—is comparatively modest, consistent with more limited substitutability between real estate and financial assets than across financial assets. Accounting for the introduction, in 2018, of a 30% flat tax on financial capital income—which further increases the return differential—reduces the estimate by about one-third, reinforcing this conclusion. Second, I quantify the revenue implications of the portfolio rebalancing response. Using the estimated cross-elasticity, I show that absent the rebalancing response to the newly introduced tax differential, post-2017 wealth tax revenues would have been from 9% to 13% higher to their observed level.

In the final part of the paper, I explore several explanations for this low degree of substitutability. A first key factor is the consumption value of housing, which has been shown to constrain households' portfolio choices (Martínez-Toledano, 2022). Consistent with this mechanism, I find that rebalancing responses are substantially larger when focusing on housing wealth net of the primary residence, with a cross-elasticity of 7.2. These responses are driven primarily by taxpayers with rental income—that is, by those owning rental properties. A second explanation is the limited scope for tax avoidance. Unlike settings where high elasticities often reflect avoidance behaviors (Saez, Slemrod and Giertz, 2012; Advani and Tarrant, 2021), the 2017 reform did not increase the scope for such strategies, as most forms of indirectly held real estate remained within the tax base. Consistent with this, taxpayers more prone to tax planning—as proxied by their use of tax credits—do not respond more strongly. Finally, portfolio diversification and financial literacy

[4] A wealth tax rate of 1% means that a 1% increase in the net-of-tax rate can also be interpreted as a 1 percentage point decrease in the wealth tax rate.

[5] To clarify that the cross-elasticity captures a positive reallocation from housing to financial assets, cross-elasticites reported in the paper are multiplied by -1, so that they are expressed as positive values.

contribute to heterogeneity in responses, while fixed participation costs, risk aversion, and price anchoring seem to play a limited role.

This paper is silent on the overall welfare effects of the reform. Such an analysis would require estimating taxpayers' own-elasticity of financial wealth based on financial income flows, which imperfectly reflect their underlying holdings. Yet several important takeaways emerge from the analysis of the 2017 French wealth tax reform conducted here. First, given the stated aim of the reform—to induce wealthy households to rebalance their portfolios away from real estate and toward financial assets considered more productive[6]—the modest reallocation suggests that exempting financial assets from wealth taxation in France primarily operated as a tax cut for wealthy households. Second, the modest cross-elasticity implies that taxing real estate more heavily than other forms of capital does not trigger large portfolio rebalancing, even at the top of the distribution, suggesting that progressive property taxation has substantial revenue-raising potential.

This paper contributes to three main strands of the literature. First, a growing body of research studies wealth taxation and how households respond to it (Brülhart et al., 2022; Jakobsen et al., 2020; Zoutman, 2018; Seim, 2017; Agrawal, Foremny and Martínez-Toledano, 2023; Londoño Vélez and Ávila-Mahecha, 2022; Bach et al., 2020; Ring, 2024; Alstadsæter et al., 2022; Iacono and Smedsvik, 2023; Mas-Montserrat, Durán-Cabré and Esteller-Moré, 2025; Bach, Guillouzouic and Malgouyres, 2025; Jakobsen et al., 2026). Most papers estimate either migration semi-elasticities or elasticities of taxable wealth, both of which are central to deriving optimal wealth tax rates. Evidence on how taxpayers respond to the design of wealth taxes remains scarce and focuses primarily on filing requirements or pre-populated returns (Garbinti et al., 2023; Saez and Seim, 2025). To the best of my knowledge, this literature has remained silent on cross-elasticities, a key parameter for the design of the wealth tax base. The main contribution of this paper is to estimate the cross-elasticity of housing with respect to the wealth tax differential between housing and financial assets. This estimate allows me to quantify the revenue cost of excluding financial assets from the wealth tax base while maintaining taxation of real estate. While non-negligible, the revenue impact is limited. Moreover, by using non-resident taxpayers as a control group, I identify behavioral responses beyond the exemption threshold—including among the very wealthy—in contrast to standard approaches that rely on bunching or difference-in-differences designs around that threshold.

A few papers study rebalancing responses to wealth tax differentials (Alvaredo and Saez, 2009; Mas-Montserrat, Durán-Cabré and Esteller-Moré, 2025; Guiso, Fagereng and Ring, 2024). Other work focuses on the effects of differential taxation in the context of inheritance taxation (Goupille-Lebret and Infante, 2018;

[6]Announced by the future French President Emmanuel Macron during the 2017 presidential election campaign, the stated goal of this policy was to stimulate economic activity by transforming the French wealth tax into a "tax on the real estate rent", thus excluding all assets financing the "real economy" from the tax base (https://www.lesechos.fr/2017/02/ce-que-propose-macron-pour-reformer-lisf-160452)

Micó-Millán, 2024) or income taxation (Poterba and Samwick, 2003; Alan et al., 2010; Desai and Dharmapala, 2011). A substantial literature on crowd-out in retirement savings also documents substitution across retirement accounts and between retirement and non-pension wealth (Poterba, Venti and Wise, 1995; Engelhardt and Kumar, 2011; Chetty et al., 2014). A parallel finance literature investigates the sensitivity of investors' portfolios to return differentials, in particular to the risk premium (Merton, 1969; Dominitz and Manski, 2007; Gârleanu and Pedersen, 2013; Ameriks et al., 2020; Giglio et al., 2021; Guiso, Fagereng and Ring, 2024). These literatures primarily focus on portfolio choices across different types of financial assets, abstracting from real estate. Yet housing is typically households' main asset, and its dual role—as both a consumption and an investment good—complicates the standard two-asset framework. The second contribution of this paper is to show that real estate and financial assets are relatively poor substitutes.

Finally, the role of housing consumption in constraining household portfolio choices has been widely documented in the literature (Grossman and Laroque, 1990; Brueckner, 1997; Flavin and Yamashita, 2002; Cocco, 2004; Martínez-Toledano, 2022). Martínez-Toledano (2022) shows that, in the context of housing busts in Spain, wealthy households—which hold a larger share of investment housing—are better able to adjust by reshuffling their portfolios. I show that even when abstracting from the role of the primary residence—thereby relaxing some of the constraints imposed by housing consumption demand—the estimated cross-elasticity points to more modest rebalancing responses than those observed across different types of financial assets. This pattern is consistent with models featuring wealth in the utility function (Saez and Stantcheva, 2018), or with real estate serving as a hedge against financial risk (Jordá et al., 2019).[7]

The rest of the paper proceeds as follows. In section 2, I describe the institutional context and the tax variation introduced by the 2017 wealth tax reform. Section 3 presents the data. In section 4, I estimate the responses to the reform by looking both at variations in real estate ownership and capital income. Then, section 5 estimates the cross-elasticity and assesses the impact of the reform on government revenue. Section 6 explore the mechanisms behind the reshufling while section 7 concludes.

2 Institutional setting

The first progressive annual wealth tax has been been introduced in France in 1982. After being temporarily removed, it was reintroduced in 1989 under the name *Impôt de Solidarité sur la Fortune* (ISF). After 2017, following the election of Emmanuel Macron, the ISF is repealed and replaced by a real estate tax called *Impôt sur la Fortune Immobilière* (IFI). The aim of this section is to illuminate the key institutional details of

[7] My paper also relates to a smaller literature studying the economic effects of the 2017 wealth tax reform in France along various dimensions (Bach et al., 2021*a*; Paquier, Schmitt and Sicsic, 2019; Cagé and Guillot, 2026; Le Pouhaër, 2023; France Stratégie, 2023; Bach, Guillouzouic and Malgouyres, 2025). To date, there is no clear-cut evidence of salient real responses to the reform. I contribute to this literature by showing that French taxpayers reallocated part of their real estate wealth toward financial assets after 2017.

the wealth tax and of the 2017 reform that I leverage in the analysis. See Appendix section A1 for a more detailed description of wealth taxation in France.

2.1 The Impôt de Solidarité sur la Fortune

The ISF (1989-2017) applied to taxpayers—defined at the tax unit level (household)—with net taxable wealth above an exemption threshold. The exemption threshold has varied over time but was set at 1.3 million euros after 2013, affecting roughly the top 1% of the household wealth distribution in France. The tax schedule was progressive with rates ranging from 0.5% to 1.5% for the top tax bracket, above 10 million euros.

The tax base. The tax base was composed of all worldwide assets, above the exemption threshold, owned by French taxpayers on January 1^{st} of the fiscal year. Non-residents could also be liable to the ISF under certain conditions, but specific rules apply (see below). The ISF was a self-assessed tax, meaning that taxpayers had to report the value of their assets themselves. The aim of this tax was originally to be comprehensive, but many exemptions reduced significantly the tax base. Most importantly, business assets of owner-managers were fully exempted.[8] Antiques and artworks were also excluded from the tax base. Besides, the tax value of primary home was set at 70% of its market value. This rate was 25% for woods, forests and rural properties.

The simplified tax returns. From 2011 to 2017, taxpayers with taxable wealth below a certain threshold were only required to file a simplified wealth tax return. Under this simplified regime, taxpayers only needed to report their total net and gross taxable wealth, along with any applicable tax credits. From 2013 to 2017, the threshold determining the reporting requirements is set at 2.57 million euros of taxable wealth. For further details on the simplified filing rules and their implications, see Garbinti et al. (2023). In this paper, I restrict the analysis to households with taxable wealth above this threshold in order to (i) observe detailed portfolio composition and (ii) avoid any confounding effects arising from the repeal of the simplified filing regime in 2018.

2.2 The 2017 wealth tax reform

Shortly after the 2017 election of Emmanuel Macron as the new President of France, the *Impôt de Solidarité sur la Fortune* (ISF) is replaced by the *Impôt sur la Fortune Immobilière* (IFI), a tax on real estate assets. The stated aim was to "incentivize risk taking over rent seeking" by exempting all investment in "productive

[8]Business assets are defined as shares in a company, including listed firms, in which the taxpayer undertakes managerial activities as their main activity (from which they receive more than half of their professional income) and in which they hold more than 25% of the capial.

capital" from the wealth tax. Importantly, the design of the new tax, introduced in 2018, is very similar to the ISF, except in its restriction to real estate wealth. Indeed, most of the features of the ISF such as the tax schedule, the exemption of business assets, the tax ceiling etc. remain unchanged.

In short, the tax base of the IFI is limited to the worldwide real estate assets of French residents—including houses, apartments, land, and agricultural property—held both directly and indirectly.[9] Partial exemptions on primary residences, as well as on woods, forests, and rural properties, are maintained. As under the ISF, business assets remain exempt, meaning that professional real estate is excluded from the tax base. Finally, some minor restrictions were introduced on the types of debts deductible from the IFI base (see Appendix section A1). In my analysis, I focus on gross wealth rather than net wealth, allowing me to abstract from these minor changes. Overall, the taxation of real estate under the IFI aligns closely with that under the ISF.

Importantly, the 2017 wealth tax reform came with a second reform aiming to foster private financial investment which introduced flat-rate taxation of financial capital income at 30%. This concomitant reform increased the net return differential between financial and housing wealth, thereby strengthening incentives for portfolio rebalancing after 2017. I account for this second reform when estimating the cross-elasticity and show that doing so yields an even smaller estimate than when considering only the wealth tax reform. This reinforces the paper's main finding: the cross-elasticity between real estate and financial assets is strictly positive but modest in magnitude.[10]

2.3 Non-residents

Tax residency is defined at the individual level, as opposed to the household level. An individual will be considered as non-resident if they satisfy the following three conditions: i) their main home is located outside of France, ii) they don't have any significant professionnal activity in France, and iii) they don't have their main economic interests in France.[11] All non-residents receiving income originating from France are subject to the income tax in France (in proportion to their income of French origin—conditional on specific tax treaties). Non-residents may also be liable to the wealth tax if they own assets in France. In that case, the

[9] The tax base includes shares in companies or partnerships that own real estate directly or through a chain of shareholdings, as well as the portion of the redemption value in life insurance or capitalization contracts that corresponds to taxable real estate. Common vehicles used to hold real estate include *Sociétés Civiles Immobilières* (SCI), *Sociétés Civiles de Placement Immobilier* (SCPI), and *Organismes de Placement Collectif Immobilier* (OPCI). In certain cases, shares in companies or entities holding real estate may be excluded from the IFI tax base. See Appendix section A1 for details.

[10] A corporate income tax cut was also enacted in France in 2017, reducing the rate from 33% to 25%, which should in principle favour financial assets over real estate. However, this reduction was phased in gradually—remaining limited in the first two years and only reaching its full extent in 2022. The dynamics of the estimated response suggest that most portfolio adjustment occurs early in the period, indicating that the corporate tax cut does not play a first-order role. If anything, its presence reinforces the paper's findings: by further increasing incentives for rebalancing toward financial assets, it suggests that the underlying cross-elasticity may be even smaller than estimated.

[11] See https://www.impots.gouv.fr/particulier/suis-je-bien-non-resident

same tax schedule as for French residents applies.[12] Under the ISF, however, non-residents benefited from a full exemption on the vast majority of their financial investment (stocks, bonds, deposits, life insurance etc). As a result, notwithstanding some rare exceptions, the wealth tax base of non-residents before the 2017 reform is already restricted to their French real estate holdings.[13] Therefore, the 2017 policy change does not affect their incentives to reallocate their assets away from real estate.

2.4 Policy variation and Differential Wealth Tax Rates

The transformation of the wealth tax into a real estate tax fully exempted financial assets, thereby creating a sizeable wealth tax differential between asset classes. Figure 1, Panels a) and b), summarize the effect of the reform on this differential by showing the evolution of statutory top marginal wealth tax rates and observed average marginal tax rates across asset classes. Panel a) highlights the sharp reduction in the top statutory marginal rate on financial assets held by French residents following the 2017 reform, while the rate applied to real estate remains unchanged. The top marginal wealth tax rate differential between real estate and financial assets increases from 0 to 1.5 percentage points following the reform. Panel b) reports the evolution of observed average marginal tax rates across asset classes. Because of the progressivity of the pre-reform wealth tax schedule, observed average marginal tax rates lie below the corresponding top statutory rates.[14] Appendix Figure 10 extends the analysis by incorporating income taxation, which, following the 2018 flat tax reform (see subsection 2.2), treats financial capital income more favorably than rental income. Accounting for this concomitant change implies tax rate differentials across assets ranging from 1.95 to 2.25 percentage points, depending on the assumed rate of return.

As illustrated in Panels d) and e) of Figure 1, the reform did not affect non resident's tax differential. Both statutory and observed top marginal tax rates on both asset classes remain stable throughout the entire period. The average top marginal tax rate on real estate for non-residents is slightly higher but broadly comparable to that faced by French residents. As discussed above, the marginal tax rate on financial assets for non-residents is 0% both before and after the reform.

[12] The taxation of non-residents in France is subject to some bilateral tax treaties. For example, a Saudi tax resident will be exempted from the French wealth tax if they directly own enough EU securities.

[13] I provide in the Appendix section A1 details of cases where the exemption on financial investment did not apply. These cases are however rare. I deal with them in the analysis by dropping all non-residents reporting significant financial wealth at any point in the sample period.

[14] Note that the 2017 reform mechanically reduced the wealth-tax base, which should have lowered the average marginal tax rate on real estate. In practice, this effect is largely offset by the sharp reduction in the number of taxpayers eligible for the tax ceiling, who therefore no longer face a 0% marginal wealth tax rate. The tax ceiling is a mechanism limiting the amount of (income + wealth) tax liabilities a household has to pay to 75% of their taxable income. Thus, taxpayers benefiting from the ceiling between 2013 and 2017 face a 0% marginal tax rate on their wealth during this period.

3 Data

I use an administrative longitudinal dataset produced by the French tax authority providing information on the universe of wealth and income tax returns over the 2006-2022 period. A unique identifier for each fiscal household and taxpayer allows me to match income to wealth tax returns for each household and to follow them from year to year. Details about the data processing and the variables definitions are provided in Appendix sections A2 and A3.

Personal income tax returns. The income tax returns (tax form "2042") include information on the components of taxable income for each member of the household as well as some demographics (age, marital status, children etc.). For each fiscal year t, income tax liabilities are based on income received in year t-1. Importantly for my empirical strategy, the income tax data contain information on the *département* of residence, which is a piece of information I use to identify non-residents.

Wealth tax returns. The wealth tax returns (tax form "2725") provide information on the components of taxable wealth as well as potential tax credits or reductions reported by wealth taxpayers. Thus, unless the taxpayer falls under the simplied reporting regime, its tax return contains information on the value of primary home, other housing, stocks, deposits, etc. Importantly, when real estate is held indirectly, it is reported together with other financial assets.[15] Thus, precise information on indirect ownership of real estate is only accessible after the 2017 reform, when financial wealth is no longer taxed. In 2018, indirect ownership of real estate represents 17% of taxable real estate. In the analysis, I circumvent this issue by focusing on directly held real estate only. I also show that the cross-elasticity of indirectly held real estate would need to exceed the direct elasticity by more than a factor of six to double the total (direct + indirect) cross-elasticity—yet even then, the implied total remains modest relative to estimates of substitutions across various financial assets. Importantly, due to the broad nature of the wealth tax base after 2017, applying to real estate assets held both directly and indirectly, the reform does not affect taxpayers' incentive to change the way they hold real estate.

Identification of non-residents. Among income taxpayers, I identify non-residents using the information on the *département* of residence reported in the income tax files, where non-residents are coded as "9B3 DRESG". However, some non-residents own sufficient assets in France to be liable for the wealth tax but do not earn taxable income in France, and thus do not file an income tax return. Since this situation only arises

[15] Under box CE, "autres valeurs mobilières" and CD, "Droits sociaux de sociétés dans lesquelles vous exercez une fonction ou une activité".

for non-residents, I define this second group as taxpayers who file a wealth tax return but no income tax return in a given year.[16]

Descriptive statistics. Table 1, columns 1 and 2 present descriptive statistics for the full population of wealth taxpayers in France in 2016 and 2018. The choice of 2016 instead of 2017 as reference pre-reform year in the paper is made to account for the potential anticipation responses to the reform.[17] On average, ISF taxpayers (2016) are 69 years old. Almost 70% of them receive pension income and about 18% live in Paris. Their average annual taxable income is 150,000 euros and their average taxable wealth is around 2.8 million euros. It is divided between 48% of real estate (including 19% for their primary residence) and 52% of financial assets.[18] Their effective tax rate (wealth tax liabilities after reductions and ceiling relative to net taxable wealth) is 0.32%. The number of wealth taxpayers goes from around 350,000 in 2016 to 130,000 in 2018, the year the reform is implemented. The average taxable wealth decreases to 2.3 million euros because financial wealth stops being taxed but the average taxable income received by IFI taxpayers suggests that they are on average richer than ISF taxpayers (260,000 euros vs. 150,000 euros).

4 The Effect of Differential Wealth Taxation on Portfolio Allocation

The aim of this section is to investigate the extent to which taxpayers reshuffled their portfolio in response to the reform. The empirical strategy relies on the comparison between French residents' wealth outcomes and non-residents' in a difference-in-differences design.

4.1 Definition of Treatment and Control Groups

Treatment group I define the treatment group as French households who own sufficient real estate before 2017 to remain liable to the wealth tax after the reform in the absence of any behavioral response. Specifically, this group comprises taxpayers who: i) are liable to the wealth tax continuously throughout 2013, 2014, and 2015; ii) always file a detailed tax return; and iii) report at least 1.3 million euros in directly held taxable real estate net of debts. Since financial and mortgage debts are reported together, I use a conservative definition

[16] A deceased individual may have zero income but positive wealth in a given year, since taxable wealth is assessed as of January 1st. To avoid misclassifying such individuals as non-residents, I exclude from the non-resident group any taxpayer who files a wealth tax return but no income tax return in year t, and who subsequently files neither return in year $t+1$. Additionally, a one-year lag between income and wealth taxation introduces complications for new non-residents with French taxable income, as their wealth only becomes taxable in the following year. To address this, I also exclude all new non-residents (defined as those who become liable for French income tax in a given year) who lack wealth tax data for that same year.

[17] Candidate Emmanuel Macron announced in Februrary 2017 his will to reform the French wealth tax and was elected in April 2017 which was almost two months before the wealth tax return should be submitted (June 15^{th}).

[18] As mentioned above, all wealth taxpayers with net wealth below 2.57 million euros between 2013 and 2017 (3 million euros in 2011 and 2012) don't have to report their wealth by asset type. Thus, the decomposition presented here is based on the wealth structure of households liable to the wealth tax in 2016 as observed in 2010.

of net taxable real estate—taking all debts into account—in my preferred specification.

Control group I define the control group as non-resident taxpayers liable to the French wealth tax in 2013, 2014 and 2015. Since their taxable wealth consists exclusively of their real estate holdings, I am not constrained to select only those filing detailed returns, which substantially expands the size of the control group. Additional restrictions to account for the rare exceptions in the exclusion of financial assets from the tax base of non-residents are presented in Appendix section A4.

A potential concern is that the treatment and control groups may have been differentially exposed to house price inflation. Beyond testing for the presence of differential pre-trends between the two groups, I directly examine this issue in Appendix Section A5 by constructing house price indices for wealthy French and non-resident taxpayers. I show that average house price inflation in France has been nearly identical for both groups over the 2013-2022 period, which alleviates concerns about differential inflation.

Appendix Section A6 shows that estimating the effect of the reform using as a control group French taxpayers who essentially own only their primary residence—and are therefore very unlikely to respond by selling it—yields very similar results.

Additional restrictions Endogenous switching between groups is a common threat to identification in difference-in-differences settings. In this paper, this can happen through migration responses to the reform—e.g., if non-resident taxpayers migrate to France once financial assets become (wealth) tax free. I address this issue in the difference-in-differences specification by restricting my treatment group to households who are never non-residents between 2013 and 2022 and my control group to taxpayers who remain non-residents throughout 2013-2022.[19]

Descriptives on the estimation sample Table 1, columns 3 and 4, presents descriptive statistics for the treatment and control groups in 2016. The mean treated taxpayer is on average 73 years old and is twice as likely to live in Paris as the average wealth taxpayer. Their taxable income consists for about 50% of wages and pension income and 50% of capital income. They report on average 6.4 million euros in taxable wealth, slightly more than half of it being real estate and face a 0.56% effective wealth tax rate. Non-residents in the control group are younger than the average wealth taxpayer, 59% of them receive taxable income in France, more than 90% of which is rental income. They own on average slightly less than 3 million euros of taxable real estate.

[19]The ideal specification would be to condition on pre-reform variables only in order to account for the migration response to the reform. Unfortunately, as noted in Appendix section A2, the fact that taxpayers who migrate sometimes change their fiscal identifier prevents me from doing this.

4.2 Empirical Strategy

In order to estimate behavioral responses to the 2017 reform, I compare wealth outcomes of French wealth taxpayers to non-residents' in a difference-in-differences setting (DiD). The baseline specification is given by:

$$Y_{it} = \sum_{j \neq 2016} \beta_j \cdot Year_{j=t} \cdot Treat_i + \gamma_i + \eta_t + v_{it} \tag{1}$$

Where Y_{it} is the wealth outcome for household i in year t; $Treat_i$ is a binary variable equal to 1 if household i is in the treatment group and 0 if it is in the control group; γ_i is a household fixed effect and η_t is a year fixed effect. Standard errors are clustered at the household level. The coefficient of interest is β_j, which captures the average difference in outcomes between the treatment and control groups in year t. The reference year is 2016, allowing me to observe any anticipatory reallocation behavior in 2017. Occasionally, I employ a more compact version of the baseline model presented in equation (1) where all post-reform $Year \cdot Treat$ dummies are replaced by a simple $Post \cdot Treat$ dummy.

It is widely accepted that the consumption demand for housing services constrains households' portfolio choices (Grossman and Laroque, 1990; Brueckner, 1997; Flavin and Yamashita, 2002; Cocco, 2004; Martínez-Toledano, 2022), which complicates the conventional two-asset arbitrage framework. While my baseline specification examines the effect of the reform on taxpayers' total taxable housing wealth—which is what matters for tax revenue—I also estimate the rebalancing response to the reform by relaxing this "housing constraint," focusing instead on housing wealth net of the primary residence. The baseline specification relies on a balanced sample of taxpayers subject to the wealth tax between 2013 and 2022. Appendix results based on an unbalanced sample are similar.

The specificity of the 2017 reform, which reduces the incentives for French taxpayers to hold real estate only *relative* to financial assets, makes it possible to interpret any post-reform divergence in taxable real estate between the treated and the control groups as a reallocation response. The key identifying assumption making it possible to interpret the β_j as causal is that the outcomes of the treated French taxpayers and the control non-residents would have evolved similarly in the absence of the 2017 reform. The reported stock of real estate evolves similarly between the two groups before the reform, providing support for the validity of this assumption. In the Appendix, I show that the parallel pre-trends remain robust when extending the sample period back to 2010.[20]

[20] Extending the sample period comes at the cost of a substantially smaller balanced panel: requiring French and non-resident taxpayers to be liable to the wealth tax—and not change residence status—every year from 2010 to 2022 reduces the sample size by roughly half, which is why my preferred specification begins in 2013.

4.3 Tax Base and Tax Rate Differential

Figure 2a displays the time series of average net taxable wealth for French and non-residents households. Three key patterns emerge. First, French taxpayers experienced a reduction in taxable wealth of about 50% between 2017 and 2018. An important part of this sizeable drop is mechanical and comes from the exclusion of financial assets from the tax base. One of the goal of this paper is to estimate what portion of this decline stems from behavioral reallocation responses to the tax change. Second, non-residents show no change around the reform period, consistent with the fact that they were not affected by the policy change. Third, before the reform, French residents' average taxable wealth was substantially higher and grew more rapidly than non-residents', but afterward—once the tax base definition became identical for both groups—they converged in both level and trend. This convergence pattern suggests that most of the reallocation happens in 2018 and that non-residents serve as an appropriate comparison group once the tax base is harmonized across both populations.

Figure 2b shows coefficients estimated from equation (1) where the outcome variable is the difference in marginal tax rates between real estate and financial assets. The difference increases sharply for French taxpayers compared to non-residents after the reform. On average, the difference in marginal tax rate borne by French households after the reform increased by 0.89 percentage points compared to non-residents, which is sizeable. As an illustration, if we assume a 5% rate of return on wealth, this tax difference translates into a $0.88/0.05 \approx 18\%$ gap in capital income tax rate depending on the class of asset generating the income.[21]

Results provided in Figures 2a and 2b make two points. First, the 2017 reform reduced dramatically the wealth tax base for French taxpayers, but not for non-residents. Second, the wealth tax differential between real estate and financial assets faced by French households after the reform is sizeable and leads to important incentives for French taxpayers to rebalance their portfolio.

4.4 Magnitude of the Reallocation Response to the Reform

I investigate the behavioral responses to the 2017 wealth tax reform by studying the evolution of reported housing wealth among French taxpayers relative to non-residents over the 2013–2022 period. Specifically, I examine both total taxable real estate and taxable real estate net of primary residence by estimating the difference-in-differences model presented in equation (1), using (log) transformations of the outcome variables. The analysis relies on a balanced panel of taxpayers liable to the wealth tax throughout the 2013–2022 period.

Figure 3a shows the evolution of reported real estate holdings from 2013 to 2022 for both treated and con-

[21] As stressed in Section 2.4, the post-2017 gap is even wider when incorporating differential income taxation between rental and financial capital income.

trol groups. The stock of real estate evolves nearly identically in both groups before the reform but diverges immediately afterward. Figure 3b, which plots the diff-in-diff coefficients, reveals that French taxpayers experienced an average 4.1% decline in housing wealth compared to the control group over the full post-reform period, with the gap widening to 5.1% by the end of the period, five years after reform implementation. Although some reallocation continues throughout the post-reform period, the most of the decrease occurs during the first post-reform year (2018). Figure 3c presents the difference-in-differences estimates for real estate wealth, excluding primary residences, for French taxpayers.[22] Interestingly, the behavioral response is considerably larger with this specification: results indicate that, by 2022, non-primary real estate reported by French taxpayers had declined by 7.8% relative to 2016. This substantial difference confirms that real estate is a closer substitute for financial assets when it does not serve as a primary residence, providing further evidence that the consumption value of housing constrains households' portfolio decisions (Martínez-Toledano, 2022) (see Section 6.1 for a more in-depth discussion of this phenomenon).

Robustness Appendix Figure 11a presents estimates of rebalancing responses using an unbalanced panel of wealth taxpayers, yielding results similar to our balanced panel approach. Figure 11b shows results from equation (1) using taxable real estate scaled by the 2013-2015 average as the outcome variable, yielding a very similar pattern.[23] Figure 11c displays results using taxable real estate in levels (euros), suggesting that five years post-reform, the difference in real estate reported by French versus non-resident taxpayers decreased by 215,000 euros compared to 2016. Figure 12c presents diff-in-diff coefficients obtained when using net rather than gross real estate for non-residents (while maintaining gross real estate for French taxpayers).[24] The larger estimated response in this specification likely reflects the introduction of restrictions on deductible debts under the 2017 reform (see subsection 2.2), highlighting the importance of using gross taxable wealth in the preferred specification. In Figure 11d, I report coefficients estimated from an alternative specification that extends the sample period back to 2010. This extension substantially reduces the size of the estimation sample and requires adjustments to the definition of housing wealth for non-residents in 2011 and 2012 due to data limitations, but it delivers qualitatively similar results.[25] Importantly, the absence of differential pre-trends is confirmed over this longer pre-reform period.

The introduction of a flat tax on financial capital income in 2018 has been shown to trigger substantial div-

[22] By definition, non-residents have their primary residence outside France; thus, the definition of housing wealth for the control group is identical across specifications.

[23] Scaled values are winsorized at the 99th percentile of the non-zero distribution.

[24] Recall that financial and mortgage debts were jointly reported for French taxpayers before the 2017 reform.

[25] The estimation sample is reduced by roughly half when requiring French and non-resident taxpayers to be liable to the wealth tax—and not change residence status—every year from 2010 to 2022. Moreover, information on gross taxable wealth is very often missing for non-residents in 2011 and 2012. In these cases, I define housing wealth as net taxable wealth for the entire sample period. Finally, because the threshold for filing a detailed return—and thus for observing housing wealth—was set at 3 million euros in 2011 and 2012, I restrict the treatment group to taxpayers reporting at least 3 million euros in total taxable wealth (housing + financial) in 2010 as well, in order to limit severe mean reversion.

idend payouts, particularly among owner-managers (Bach et al., 2021*b*). Appendix 12a shows that excluding owner-managers from the sample has virtually no effect on the estimated evolution of housing wealth, indicating that the rebalancing between real estate and financial assets documented here is distinct from the retiming response in dividend payouts identified by Bach et al. (2021*b*).[26] In this paper, treatment assignment depends on past values of real estate holdings, which are also the outcome of interest. This creates a potential identification challenge similar to those faced in settings where taxpayers just above and below tax thresholds are compared. Such designs may raise concerns that part of the estimated post-reform evolution reflects mean reversion rather than a true behavioral response (Weber, 2014; Jakobsen and Søgaard, 2022). The absence of differential pre-trends provides initial reassurance against this concern. To further mitigate potential mean reversion issues, I construct alternative treatment groups based on real estate reported in earlier years (2011, 2012, 2013, or 2014) and re-estimate equation (1) using each of these definitions. As shown in Figure 12b, the different treatment definitions have minimal impact on the results, yielding estimates closely aligned with the baseline specification. Finally, Figure 12d presents results obtained when restricting the control group to non-residents who file a detailed tax return in all years of the sample period and using directly held real estate as the outcome variable. Although this specification should be interpreted with caution due to the substantially smaller control group and evidence of asset misclassification in some non-residents' detailed wealth tax returns, the resulting estimates remain broadly comparable to the baseline results.[27]

Taxpayers falling below the exemption threshold The reallocation estimated thus far captures a response on the intensive margin, focusing on taxpayers who continue to report their real estate wealth and remain liable to the wealth tax. Taxpayers who fall below the exemption threshold as a result of asset reshuffling are no longer observed. I quantify this phenomenon in Figure 3d, which displays the percentage of treated taxpayers liable to the French wealth tax over time, normalized to zero in 2016. Since nearly all treated taxpayers were liable to the wealth tax in 2016, the estimated coefficients can be interpreted both as percentage changes and percentage point differences. While the fraction of French households subject to the wealth tax remains remarkably stable before the reform, there is a drop of approximately 2.5 percentage points—equivalent to 2.5% in this context—in 2018, with the decline continuing over the rest of the study period. By 2022, the share of treated French wealth taxpayers liable to the wealth tax has fallen by about 5% relative to 2016. Importantly, given treated taxpayers' baseline housing wealth, the estimated average decline in housing wealth following the reform predicts relatively well the number of taxpayers who should fall below the 1.3 million

[26] This does not imply that the two reforms operated independently—on the contrary, they likely interacted, and this interaction is incorporated into the elasticity estimates. Rather, the key point is that the taxpayers who responded most strongly to the flat tax reform along the dividend margin are not those who reduced their taxable housing wealth the most.

[27] See Appendix A3 for details on how this asset misclassification is dealt with.

euro exemption threshold. This suggests that the "extensive margin" response is not fondamentally different from the intensive margin response. Given this alignment, I focus on the intensive margin response in the remainder of the paper.

4.5 Interpreting the Response as a Reallocation Response

The 2017 French wealth tax reform is particularly appealing to study portfolio rebalancing responses to tax differentials because it draws a clear line between housing and financial assets. Moreover, the reform did not increase the wealth tax rate on real estate[28] thus, incentives to hold this asset are reduced only *relative* to financial assets and there is limited reasons for taxpayers to adjust their level of taxable real estate through under-reporting, tax avoidance or other motives unrelated to portfolio rebalancing. This strengthens the interpretation of the observed decline in housing wealth as a reallocation from housing toward financial assets.

Yet, the policy change also led to a sharp contraction in the wealth tax base, potentially generating revenue effects that could influence portfolio or savings decisions independently of the new tax differential. Theoretically, the impact of such revenue effects on taxpayers' reported housing wealth is ambiguous. On the one hand, a revenue effect could induce dissaving (Ring, 2024); if dissaving occurs through reductions in housing wealth, part of the observed decline in real estate would not represent reallocation toward financial assets but rather additional consumption. On the other hand, the increase in disposable income resulting from the wealth tax reduction could be invested in housing, thereby raising reported real estate and attenuating the estimated reallocation response.

I explore the potential role of this income effect by conducting a heterogeneity analysis. More specifically, I rank all treated taxpayers by quintile of baseline wealth or baseline income and estimate for each group the compact version of equation 1, where all post-reform $Year \cdot Treat$ dummies are replaced by a single $Post \cdot Treat$ dummy (see Appendix Figure 13 for the dynamic version of these estimations.).[29] Results in Figures 4a and 4b reveal remarkably consistent responses across the distribution of wealth and income. Next, I rank French taxpayers by quintiles of predicted fiscal gains from the reform—scaled by baseline wealth tax liabilities—within 100 bins of pre-reform housing wealth.[30] If income effects were driving portfolio rebalancing, taxpayers with larger predicted fiscal gains—and thus a larger increase in disposable wealth—should exhibit stronger responses. Figure 4c shows little such heterogeneity, alleviating concerns that income effects

[28] it even slightly decreased it for treated individuals, see Figure 1c

[29] Since only French housing holdings and mostly rental income are observed for non-residents, total wealth/income is not observed for this group. Thus, each regression uses the complete control group of non-residents.

[30] Predicted fiscal gains are strongly correlated with baseline portfolio allocation, which itself has a strong effect on the response to the reform. Controlling for baseline housing wealth is therefore a way to study heterogeneity in the response by fiscal gains while holding baseline housing wealth constant.

confound the results. Finally, Figure 4d illustrates how extreme income responses would affect the rebalancing estimates by assuming: i) a lower bound in which 100% of the predicted fiscal gains from the reform is reinvested in real estate, and ii) an upper bound with an extreme 1:1 dissaving effect on housing, meaning that 1 euro in tax reduction leads to 1 euro of dissaving in housing. This bounding exercise shows that even under these extreme scenarios, the estimate of the rebalancing would lie between 4.7% and 6% of housing wealth being reallocated toward financial assets.

Besides, as shown in Figure 1c, the progressivity of the wealth-tax schedule implies that the reduction in the tax base induced by the reform generates a modest decline in the average marginal tax rate on real estate for the treated group. This decline is however more than ten times smaller than the shift in the tax differential (0.07 pp vs. 0.89 pp), and its practical relevance is thus limited. In Section 5, I show that restricting the estimation to taxpayers who remain in the same marginal tax bracket—thus experiencing no change in the marginal tax rate on housing wealth—yields virtually identical cross-elasticity estimates.

4.6 The Effect of the Reform on Capital Income

A standard empirical strategy in the wealth taxation literature compares the behavior of taxpayers just below and just above thresholds associated with wealth tax changes, typically the exemption threshold (Jakobsen et al., 2020; Londoño Vélez and Ávila-Mahecha, 2022). Because taxpayers with taxable wealth below the exemption threshold are not required to file a wealth tax return, this strategy cannot be applied directly to wealth outcomes. However, it can be implemented when studying taxable income, which allows me to circumvent the incomplete information on non-residents' financial income.[31] Thus, I construct a new control group comprising French taxpayers who are expected to fall below the exemption threshold once financial assets are removed from the wealth tax base. These taxpayers are those who: i) were liable for wealth tax in each year from 2013 to 2015; ii) filed a detailed return in each of those years; and iii) reported less than 1.3 million euros in taxable real estate.[32]

When studying rental income, I control for baseline level of non-primary housing interracted with year dummies, while specifications for dividend income include control for baseline equity wealth and baseline financial income interracted with year dummies. All specifications control for taxpayer's age.[33] Since these taxpayers own less real estate than the exemption threshold before the reform, most stop paying wealth tax

[31] The taxation of financial capital income for non-residents in France is subject to bilateral tax agreements, often giving rise to tax credits. Table 1 shows that financial capital income represents a very small share of French taxable income for non-residents. As a result, comparability of taxable income between French residents and non-residents is limited.

[32] As noted in Section 3, indirectly held real estate is reported together with financial assets in wealth tax returns—under boxes CE and CD. Therefore, I limit this group to households reporting less than 1.3 million euros in directly held real estate plus the sum of holdings reported in boxes CD and CE.

[33] I restrict the sample to households liable to the income tax all years between 2013 and 2022, thus excluding households disappearing due to death.

after the reform, minimizing their incentives to substitute financial assets for real estate. If any members of this new control group remain subject to wealth tax after 2017, this will attenuate the estimated responses. Figure 5 presents the results, and Appendix Figure 14 provides the log version, though levels are preferred to handle potential zeros.

Rental income Focusing first on rental income, panel 5a shows a gradual decline among treated taxpayers after the reform relative to the control group. In 2022, treated households report roughly 1,500 euros less rental income than in 2016, the reference period. When the outcome is expressed in logs (figure 14a), the decline appears more pronounced. The lower rental income observed among the treated group suggests that they responded to the reform by selling rental properties.

Dividend income Figure 5b presents the results for dividend income. On average, dividend income received by treated households increases by nearly 5,000 euros relative to 2016, the reference period. This pronounced rise in dividends among taxpayers facing incentives to rebalance their portfolios toward financial assets, such as equities, is consistent with the rebalancing response documented in Section 4.4.

Importantly, aggregate dividend payouts in France increased in the post-2018 period for two reasons unrelated to the differential taxation of housing and financial assets: i) the introduction of the flat tax on financial capital income in 2018, and ii) the removal of the wealth tax cap for many taxpayers (Bach, Guillouzouic and Malgouyres, 2025). While these shocks should, in principle, be accounted for via the control group and the inclusion of baseline equity wealth controls, formally isolating the effect of differential wealth taxation from these confounding factors is challenging. To assess the potential influence of these alternative factors, Appendix Figure 15 reports how the estimated dividend response changes when i) excluding owner-managers, who have been shown to account for almost the entire effect of the flat tax reform on dividends (Bach et al., 2021*b*), and ii) excluding both owner-managers and taxpayers who benefited from the wealth tax ceiling at any point between 2013 and 2017.[34] Once both groups are excluded, the dividend response is reduced—confirming that interactions across the various 2017 capital tax reforms may matter—but a significant post-2018 effect persists, alleviating concerns that the observed surge in dividends is entirely driven by either the flat tax reform or the removal of the wealth tax cap.

5 Cross-Elasticity Estimates and Revenue Impact

The literature has shown that the presence of income shifting behaviors compresses optimal tax rates across income bases (Piketty and Saez, 2013; Piketty, Saez and Stantcheva, 2014). The same principle applies to

[34]Owner-managers are defined as in Bach et al. (2021*b*).

wealth taxation across asset classes: tax differentials open the room for tax arbitrage, potentially leading to large revenue losses (Gordon and Slemrod, 1988). In both cases, the magnitude of cross-base responses, as captured by the cross-elasticity, is key to assessing the revenue implications and efficiency cost of differential taxation. The goal of this section is to quantify the cross-elasticity in the context of differential taxation between housing and financial assets.

5.1 Cross-Elasticity Definition

In order to make explicit that it is the *tax differential* between real estate and financial assets that drives portfolio choices, the baseline cross-elasticity estimated in this paper is in fact a cross-*semi*-elasticity. It relates changes in the level of real estate wealth to changes in the wealth-tax differential between real estate and financial assets, leading to a cross-elasticity concept defined as:

$$\epsilon^{H,F} = \frac{\partial W^H}{\partial(\tau_H - \tau_F)} \cdot \frac{1}{W^H}.$$

With τ_F and τ_H refering to the wealth tax rate applied to financial assets and housing wealth, respectively, and W^H to taxpayers' stock of reported housing wealth. This object can be interpreted as the percentage change in taxable housing wealth following a 1 percentage point change in the wealth tax differential between housing and financial assets. Because the change in housing wealth can be interpreted as a rebalancing response, $-\epsilon^{H,F}$ refers to the share of taxpayers' housing wealth that is reallocated to financial assets following the change in wealth tax differential. Theoretically, the sign of the cross-elasticity is ambiguous—depending on whether housing and financial assets are substitutes or complement (Saez and Stantcheva, 2018)—but the empirical analysis has shown that it is negative.

Expressing the change in a tax base as a function of the tax wedge with alternative tax bases rather than of the net-of-tax rate on an alternative tax base departs from the standard approach in the optimal tax literature (Saez and Stantcheva, 2018) and is closer to the approach used in the household finance literature (see, e.g., Guiso, Fagereng and Ring (2024)).[35] Note that because the baseline wealth tax rate on financial assets is around 1% and the change in the tax differential comes almost exclusively from the reduction in the tax rate on financial assets, the two elasticities are approximately the same in the context of the 2017 wealth tax reform, which is confirmed when their respective estimates.[36,37]

[35] In the context of the 2017 reform, the standard cross-elasticity concept from the public finance literature would be that of taxable real estate with respect to the net-of-tax rate on financial assets defined as: $\frac{\partial W^H}{\partial(1-\tau_F)} \cdot \frac{(1-\tau_F)}{W^H}$

[36] If the reform affects only τ_F (i.e., $d\tau_H = 0$), then $d(\tau_H - \tau_F) = d\tau_H - d\tau_F = -d\tau_F$. Since $d(1-\tau_F) = -d\tau_F$, it follows immediately that $d(\tau_H - \tau_F) = d(1-\tau_F)$, and hence $\frac{\partial W^H}{\partial(1-\tau_F)} = \frac{\partial W^H}{\partial(\tau_H-\tau_F)}$. Thus, $\epsilon^{H,F} \cdot (1-\tau_F) = \frac{\partial W^H}{\partial(1-\tau_F)} \cdot \frac{(1-\tau_F)}{W^H}$, and the two elasticity definitions are approximately the same when τ_F is around 1%, as it is in the French case.

[37] While some treated taxpayers experienced a lower marginal tax rate on housing wealth, the average marginal tax rate on real estate wealth decreased by 0.07 percentage points on average between 2017 and 2018, compared to a 0.97 percentage points average decrease

5.2 Cross-Elasticity Estimation

As mentioned in subsection 4.5, the 2017 reform is a compelling setting to estimate the cross-elasticity of housing wealth with respect to the tax differential with financial assets because it introduces a wide wealth tax differential between housing wealth and financial assets, while the other key features of the wealth tax—in particular the rules for real estate—remain mostly unchanged. This specificity of the reform allows me to interpret the change in housing wealth following the reform as driven by the change in the tax differential pushing households to rebalance their portfolios toward financial assets.

I estimate the cross-elasticity based on the balanced sample of wealth taxpayers who remain subject to the wealth tax between 2013 and 2022 and use a model similar the compact version of the difference-in-differences model estimated earlier, in which all post-reform year dummies are pooled into one single *Post* dummy. Given that the tax rate differential between real estate and financial assets is endogeneous, I follow the literature and instrument it in a first stage with the interaction term $Treat_i \cdot Post_t$. The first stage and structural equations are respectively given by:

$$(\tau_{it}^{H} - \tau_{it}^{F}) = \delta \cdot Treat_i \cdot Post_t + \gamma_i + \eta_t + u_{it} \tag{2}$$

$$Y_{it} = \epsilon^{H,F}(\tau_{it}^{H} - \tau_{it}^{F}) + \gamma_i + \eta_t + v_{it}^{H} \tag{3}$$

Where $\epsilon^{H,F}$ is the main parameter of interest in the paper, namely the cross-elasticity of real estate with respect to the tax rate differential between real estate and financial assets; $(\tau_{it}^{H} - \tau_{it}^{F})$ is the marginal wealth tax rate differential between real estate and financial assets. I also provide elasticity estimates after accounting for the flat tax reform on financial income, which further increased the net return differential between financial and housing assets; Y_{it} is real estate wealth (W^H) for individual i in year t in log. While for the baseline cross-elasticity, housing is defined as total taxable real estate, I provide later estimates of the elasticity when housing is defined as taxable real estate net of primary residence. $Treat_i$ is the treatment dummy and $Post_t$ is a dummy variable equal to 1 for years 2018-2022. Intuitively, I instrument the change in the tax rate differential by treatment/control assignment status. It should be noted that while the tax is levied on net real estate assets, the cross-elasticity is estimated using gross real estate wealth, thus abstracting from debt. However, changes in debt are an unlikely channel for the responses documented here: since the 2017 reform introduces differential taxation while holding real estate taxation mostly unchanged, incentives to reduce taxable real estate by increasing debt were roughly unchanged by the reform.[38]

in the marginal tax rate on financial assets. It means that the average drop in the marginal tax rate on financial assets is more than 13 times larger than the decrease in the marginal tax rate on housing.

[38]Since the reform did not change incentives to reduce taxable real estate through debt, any such adjustment would have already

I also provide estimates of the cross-elasticity defined with respect to the net-of-tax rate on financial assets. It is estimated by simply replacing$(\tau_{it}^H - \tau_{it}^F)$ by $ln(1-\tau_{it}^F)$ in (2) and (3). Finally, I will also consider elasticities defined with respect to the tax-rate differential applied to asset returns, assuming a 5% gross rate of return on financial and real estate assets, following Jakobsen et al. (2020).

5.3 Cross-Elasticity Estimates

Table 2 reports the cross-elasticity estimates. To clarify that they capture a positive reallocation from housing to financial assets, the table reports $-\epsilon^{H,F}$, that is, the cross-elasticities multiplied by -1, so that they are expressed as positive values. The first three rows refer to the various elasticity concepts used, with rows 1 and 3 refering to the baseline cross-elasticity (Semi-elasticity wrt $(\tau_H - \tau_F)$), and to the cross-elasticity of housing with respect to the net-of-tax rate on financial assets (Elasticity wrt $(1-\tau_F)$), and row 2 refering to the baseline elasticity expressed with respect to differential tax rates on asset returns (Semi-elasticity wrt $(\tau_H - \tau_F)R$).

Baseline elasticity As shown in column (1), row (1), the baseline cross-elasticity is equal to 4.70 (s.e.=0.85). In economic terms, a cross-elasticity of 4.70 means that 4.70% of taxable real estate is reallocated towards financial assets in response to a 1 percentage point increase in the wealth tax rate differential between the two asset classes. Given the baseline share of financial assets in the treated group is approximately 1/2 (see table 1, column 3), it can symmatrically be interpreated as the percentage increase in financial assets following the same tax-differential increase. The elasticity expressed with respect to the net-of-tax rate on financial assets is quantitatively equivalent and is equal to 4.23 (s.e.=0.75). Translating the baseline cross-elasticity into an elasticity with respect to the tax rate differential on capital income yields a cross-elasticity of 0.24 (s.e.=0.04).

In column (2), I estimate the cross-elasticity when accounting for the introduction of the flat tax on financial capital income in 2018 (see section 2.2 for details). Given that the introduction of the flat tax increases the tax differential between real estate and financial assets, the estimated cross-elasticity, equal to 3.18 (s.e.=0.57), is mechanically lower but remains highly statistically significant. While the 2017 wealth tax reform and the capital income tax reform interact in several ways, a non-negligible share of taxpayers' real estate wealth does not generate taxable rental income and is therefore less directly affected by the widening of the differential on asset returns. It is thus unclear whether the true elasticity is better captured by the specification that accounts for wealth taxes alone or the one that incorporates both reforms. In any case, the two estimates together provide natural bounds, with the true cross-elasticity likely lying between 3.18 and

taken place prior to the reform. Figure 7f shows that the estimated rebalancing response does not substantially vary with baseline debt levels.

4.70.

Accounting for own-elasticity of housing As mentioned in subsection 4.5, the progressivity of the wealth-tax schedule implies that the reduction in the tax base induced by the reform generated a (small) decline in the average marginal tax rate on real estate for the treated group. I test for the potential role played by the lower marginal rate by displaying column (4) the cross-elasticity estimated on a group of treated taxpayers who are expected to remain in the same marginal tax bracket—given their pre-reform level of housing wealth—and hence who did not experience any changes in the marginal tax rate on housing wealth. The cross-elasticity equals 4.97 (s.e.=0.87), which is very close to the baseline. Additionally, I account for the change in the marginal tax rate on housing wealth by also instrumenting the (log) net-of-tax rate on housing, using taxpayers who benefited from the wealth tax ceiling in 2016. These taxpayers faced a 0% wealth tax rate in 2016 and the reform increases both the wealth tax differential between housing and financial wealth and also lead to a sizeable increase in the marginal tax rate on real estate. Thus, in the spirit of Gruber and Saez (2002) and Ring (2024), in equations (2) and (3), I transform a single tax instrument (the treatment assignment status) into several (treatment assignment x benefiting from the ceiling and treatment assignment x not benefiting from the ceiling), allowing me to instrument for both the change in the tax differential and in the net-of-tax rate on housing. Elasticities estimated using this specification are displayed in column (3). The cross-elasticity estimate is now equal to 4.79 (s.e.=0.84), which is almost identical to the baseline while the housing wealth own elasticity, displayed in row 5, is positive, but not significant. Taken together, these results suggest that the own-elasticity of housing is too small in the short run, and more importantly the decrease in the marginal tax rate on housing is too modest to significantly affect the cross-elasticity estimates.

Comparison with other studies Apart from Martínez-Toledano (2022) who provides empirical evidence on the degree of substitutability between housing and financial assets in the context of housing busts, the public finance and finance literatures offer very little empirical evidence on how the portfolio allocation between housing and financial assets responds to changes in return differentials. Most available evidence instead focuses on substitution across different types of financial assets—equities, pension accounts, business assets, which Table 3 summarizes. In public finance, this phenomenon is studied through the lens of portfolio rebalancing responses to tax differentials arising from wealth taxation (Alvaredo and Saez, 2009; Mas-Montserrat, Durán-Cabré and Esteller-Moré, 2025; Alstadsæter et al., 2022; Guiso, Fagereng and Ring, 2024), inheritance taxation (Goupille-Lebret and Infante, 2018; Micó-Millán, 2024), or income taxation (Poterba and Samwick, 2003; Alan et al., 2010; Desai and Dharmapala, 2011). Besides, the finance literature has also studied how portfolio shares adjust to shifts in return differentials, with a focus on changes in expected eq-

uity returns (Dominitz and Manski, 2007; Ameriks et al., 2020; Giglio et al., 2021; Guiso, Fagereng and Ring, 2024). Finally, the literature on crowd-out in retirement saving also documents substitution across retirement accounts and between retirement and non-pension wealth (Poterba, Venti and Wise, 1995; Engelhardt and Kumar, 2011; Chetty et al., 2014).

Table 3 reports key results from these studies, translated into cross-elasticity estimates (when feasible) to enable magnitude comparisons. A first takeaway is the wide dispersion in estimated elasticities across studies, reflecting differences in data sets, identification strategies, response horizons, and the asset types considered. This heterogeneity highlights the value of complementary estimates based on high-quality data and clearly identified sources of variation.

Second, a cross-elasticity of 5 lies at the lower end of existing estimates of portfolio rebalancing responses. In the context of wealth taxation, Alvaredo and Saez (2009), Guiso, Fagereng and Ring (2024), and Mas-Montserrat, Durán-Cabré and Esteller-Moré (2025) all find substantially larger elasticities, ranging from 40 to 125. Moreover, although historical evidence was mixed, more recent works on tax-favored retirement accounts also suggest a high degree of substitution between pension and non-pension wealth. Overall, with the exception of Giglio et al. (2021), who report a modest elasticity of 1 based on a survey of Vanguard clients[39], most estimates reported in Table 3 suggest a larger degree of substitution between assets than what I find in the context of the French wealth tax. In section 6, I discuss the mechanisms behind this rather modest response.

Indirectly held real estate Since precise information on indirectly held real estate—that is, shares in companies that invest in real estate—is not available before the reform, it is excluded from the analysis. Given the broad nature of the housing-wealth tax base after the reform, there is limited risk that taxpayers responded by changing the legal form through which they hold real estate. Nevertheless, if indirectly held real estate were to respond more strongly to the reform than directly held real estate, my estimated cross-elasticity would understate the true cross-elasticity of total (direct + indirect) housing. Given that wealth taxpayers' share of indirectly held real estate after the reform is 17% (see Table 1), Appendix Figure 16 illustrates how large the cross-elasticity of indirectly held real estate would need to be in order to materially affect the baseline cross-elasticity based on directly held real estate alone. As shown in the figure, for the total elasticity to be twice as large as the estimated elasticity for directly held real estate, the elasticity for indirectly held real estate would need to be more than six times larger than the direct elasticity, yielding a total cross-elasticity of around 10—a value that would still fall below many of the cross-elasticity estimates found across different financial assets in the context of wealth tax differentials.

[39] 80% of the sampled investors use Vanguard retail trading accounts, while the remaining 20% hold employer-sponsored retirement accounts.

5.4 Revenue Impact of the Rebalancing Response

Given the pre-reform level of housing wealth and the change in the tax differential, the cross-elasticity obtained in the previous section allows me to estimate the revenue impact of the rebalancing response to the reform, and to decompose the post-2017 drop in wealth tax revenue into a mechanical component and a behavioral component.

An increase in the tax rate differential triggers a reallocation response that reduces the stock of taxable real estate by $dW^H = -\epsilon^{H,F} \cdot W^H \cdot d(\tau_H - \tau_F)$. A change in taxable real estate dW^H reduces real estate tax revenue by $\tau_H dW^H$.[40] As a result, the change in wealth—i.e. real estate— tax revenues due to the reallocation response to the 2017 reform can be expressed as:

$$dB = -\tau_H \cdot e_c \cdot W^H \cdot d(\tau_H - \tau_F) \tag{4}$$

Besides, total wealth tax revenue is the product of the tax base, W and the average wealth tax rate τ: $T = \tau W$.[41] Before the reform, W is the sum of financial wealth W^F and housing wealth W^H, while after the reform, it consists only of housing wealth. In the absence of behavioral responses, mechanical changes in tax revenues due to the reform comprise two elements. First, financial wealth is no longer part of the tax base and thus generates no tax revenue. Second, housing assets held by taxpayers who own less than 1.3 million euros in housing at the time of the reform are no longer taxed and thus generate no revenues.[42] Combining these elements, mechanical changes in tax revenues, holding housing wealth constant, are given by:

$$dM = -W^F \tau^F - W^H_{low} \cdot \tau^H \tag{5}$$

Where W^F is the stock of financial wealth excluded from the tax base and W^H_{low} the stock of real estate held by households owning less than 1.3 million euros of that asset before the reform. The tax rates τ^F and τ^H are defined each year as the average effective wealth tax rate on each asset weighted by taxable wealth.

Combining equations 5 and 4, I decompose the post-2017 drop in wealth tax revenues into mechanical and

[40] In practice, the 1.3-million-euro exemption threshold means that taxpayers with real estate holdings below this level are no longer subject to the wealth tax. This subcase is accounted for in my estimation of dB: I find that about 60% of the behavioral component is attributable to taxpayers rebalancing their portfolios while remaining liable to the wealth tax—the intensive margin response—while the other half stems from taxpayers ending up below the exemption threshold and therefore facing 0 wealth tax liabilities—the extensive margin.

[41] In order to account for the progressivity of the wealth tax schedule, the average wealth tax rate τ is weighted by taxpayers' level of taxable wealth in the estimation.

[42] In reality, given the progressivity of the tax schedule, the narrower tax base after the reform slightly reduces both the marginal and average tax rates on real estate, which should contribute to a mechanical decrease in wealth tax revenues. However, this effect is almost entirely offset by two forces: (i) fewer taxpayers benefit from the tax ceiling after the reform, and (ii) investments in certain SMEs are no longer deductible. As a result, except in 2018—when SME investments made before December 2017 were still deductible—the effective wealth tax rate for taxpayers holding more than 1.3 million euros in real estate is nearly identical in 2017 and after the reform. Consequently, this third channel of mechanical revenue reduction amounts to less than 10 million euros. I account for it in the exercise but do not add it in (5) for simplicity.

behavioral components based on 2017 values of W^H and W^F.[43] Figure 6 shows the evolution of wealth tax revenues accruing from French wealth taxpayers between 2013 and 2022, decomposing the post-2017 drop into mechanical and behavioral components. The observed drop in net wealth tax revenues between 2017 and 2018 reaches almost 2.8 billion euros.[44] The mechanical part of this drop represents 2.68 billion euros, while an additional decrease of 140 million euros is due to behavioral adjustments to the reform. Note that the reallocation response also affects the income tax base—taxpayers report less rental income and more financial income. While fully accounting for these fiscal externalities is challenging, the estimated revenue impact of the reallocation response should be considered conservative for two reasons. First, financial income is taxed more favorably than rental income in France (France Stratégie, 2021). Second, because rental income is taxed progressively, if it is reallocated toward lower-income taxpayers, it is taxed at a lower rate, thereby generating less income tax revenue (Gordon and Slemrod, 1988).

Given the observed wealth tax revenues over the 2018-2022 period in France, these results suggest that absent the rebalancing response to the newly introduced tax differential, post-2017 wealth tax revenues would have been from 9% to 13% higher.

6 Mechanisms Behind the Portfolio Rebalancing

This section investigates the mechanisms behind the relatively modest responsiveness of taxpayers to the new tax differential between housing and financial assets, drawing primarily on heterogeneity analyses across taxpayers with different baseline characteristics. One caveat applies to the interpretation of these exercises: since only assets taxable in France appear in the data, key characteristics of non-resident taxpayers—such as total portfolio size or income composition—are unobserved. The heterogeneity analyses therefore compare sub-groups of treated French residents against the full control group of non-residents. A related concern is that observed heterogeneity in responses may in some cases reflect differences in baseline portfolio composition rather than true variation along the dimension of interest. Where relevant, I address this by conducting heterogeneity analyses within 100 bins of baseline housing wealth, ensuring comparisons are made between taxpayers with similar pre-reform portfolios.

[43] Two features of the wealth tax data mentioned in section 3 prevent direct observation of W^H and W^F: i) the existence of simplified tax returns for taxpayers owning less than 2.57 million euros and ii) the fact that indirectly held real estate is reported together with some financial assets before the reform. I therefore infer W^H and W^F based on reasonable assumptions detailed in Appendix section A5.

[44] These estimates exclude non-resident taxpayers. A Senate report shows that total wealth tax revenues decreased by 2.9 billion euros between 2017 and 2018.

6.1 Owner-Occupied Housing Constraints Portfolio Choices

Although the consumption role of housing is arguably less distortive for wealthy households, it has played a key role in the response to the 2017 wealth tax reform. Confirming section 4.4 results showing a larger rebalancing response to the reform when focusing on real estate wealth excluding primary residences, columns (5) to (8) of Table 2 display the cross-elasticity estimates when considering housing wealth net of primary home instead of total taxable housing wealth. As indicated in column (5), the cross-elasticity is now substantially larger, reaching 7.20 (s.e.=0.91). When taking into account the tax differential on asset returns introduced by the 2017 capital income tax reform, the cross-elasticity is equal to 4.86 (s.e.=0.61). The larger cross-elasticity for non-primary housing wealth confirms that the presence of primary residences in households' portfolio strongly constrains their portfolio rebalancing, to an extent that may appear somewhat surprising for households in the top 1% of the wealth distribution. As shown in Appendix Figure 17, taxpayers whose housing wealth consists primarily of their main residence exhibit virtually no response, whereas those with minimal exposure to primary residence holdings reduce their real estate substantially.

Non-primary housing may also be held for consumption purposes—as a secondary home, for instance—which could also explain deviations from optimal portfolio adjustment to changes in return differentials. I explore this possibility using rental income as a proxy for investment housing ownership. Figure 7b presents rebalancing estimates separately for taxpayers who report positive rental income before the reform and those who do not. Taxpayers with investment housing display substantial rebalancing, while those likely holding housing for consumption purposes only show no significant response.

These results speak to the literature on portfolio adjustment frictions, which have been identified as an important reason behind the limited sensitivity of investors' portfolio allocation to changes in return differentials—the so-called inelastic markets (Gabaix and Koijen, 2021) or sticky portfolios (Bacchetta, Davenport and van Wincoop, 2022). These frictions may be particularly pronounced for real estate, given the specific costs rebalancing entails (e.g., moving costs).

6.2 Tax Avoidance

A well-established finding in the literature on behavioral responses to taxation is that households at the top of the income or wealth distribution tend to be particularly responsive to taxes. This makes the relatively modest response to the 2017 reform somewhat surprising at first glance.

However, in the context of income taxation, the high responsiveness of top taxpayers has been shown to reflect primarily avoidance responses—such as income shifting or retiming—rather than real economic adjustments such as changes in labor supply or saving (Saez, Slemrod and Giertz, 2012). The same phe-

nomenon explains the rebalancing responses reported in Alvaredo and Saez (2009), Mas-Montserrat, Durán-Cabré and Esteller-Moré (2025), and Micó-Millán (2024), translated into cross-elasticities in Table 3: these estimates likely capture avoidance behavior—such as relabeling taxable business assets as tax-exempt by increasing ownership shares—without necessarily reflecting true changes in the underlying risk or return characteristics of taxpayers' portfolios. By contrast, a key feature of the 2017 wealth tax reform is that it left limited scope for pure avoidance in the sense that taxpayers could not reduce their taxable real estate holdings without altering the actual composition of their portfolios.[45] In particular, the post-reform tax base continued to include most common forms of indirectly held real estate. One exception concerns shares of listed real estate investment companies (SIIC), which became exempt from the wealth tax after the reform.[46] To assess the sensitivity of my results to such avoidance opportunities, I examine the evolution of dividends paid by SIIC companies—reported separately from other dividends in income tax returns—around the reform, using the same empirical approach as in Section 4.6 for other forms of capital income.[47] The results, shown in Figure 5c, indicate a statistically significant but quantitatively small difference in 2018, while SIIC dividends evolve similarly in the treatment and control groups over 2019–2022. The log specification reported in Figure 14c yields no significant coefficient in 2018. These elements are consistent with a real rebalancing response to the 2017 wealth tax reform, whereby taxpayers react to the policy change by selling properties rather than exploiting the rare loopholes in the tax base.

Importantly, this result does not imply that taxpayers do not engage in tax avoidance in order to reduce their wealth tax liabilities. Indeed, there is evidence that wealthy French taxpayers tend to underreport the value of their home in order to reduce their wealth tax payments (Herlin-Giret, 2019). However, tax avoidance does not seem to be a key driver of the behavioral response to the reform. I investigate the role of tax avoidance further by examining heterogeneity in portfolio rebalancing based on taxpayers' use of wealth-tax credits prior to the reform.[48] I measure tax credits as the ratio of total credits to wealth tax liability, which provides a proxy for taxpayers' propensity to (legally) reduce their tax burden.[49] I rank treated taxpayers by their baseline level of tax credit use and split the treatment group at the median, within bins of baseline housing wealth. If avoidance were a central mechanism, taxpayers making greater use of tax credits should exhibit stronger rebalancing responses. Figure 7c, however, shows no significant difference in rebalancing

[45] Although the distinction between real and avoidance responses is less clear-cut in the context of portfolio rebalancing, one may think of an avoidance response as reducing taxable real estate through changes in the legal form of ownership, whereas a real response would involve selling real estate assets and acquiring financial assets.

[46] Provided the taxpayer owns less than 5% of the shares and voting rights. See Appendix section A1 for details on the post-2017 wealth tax treatment of real estate.

[47] Dividends paid by SIIC companies are reported in box 2TS of the income tax return, whereas other dividends appear in boxes 2DC and 2DA. A few additional items are also reported in box 2TS (including life-insurance contracts of less than eight years), but these are not tax-advantaged and are likely to be rare.

[48] Prior work by Garbinti et al. (2023) shows that wealth-tax payers who bunch at information discontinuity thresholds tend to report higher levels of tax credits.

[49] Tax credits include charitable donations, direct and indirect investments in small and medium-sized enterprises, and the tax cap. They correspond to boxes NH, ND, MU, MW, MY, NB, and PV of the wealth tax return.

between high and low tax credit users. These elements suggest that beyond the key role of consumption housing, the modest rebalancing response to the reform may also reflect a limited role for tax avoidance.

6.3 Portfolio Diversification

A key difference between the cross-elasticity estimated in this paper and the empirical estimates of rebalancing behavior surveyed in Table 3 is that this paper examines substitution between housing and financial assets rather than rebalancing within financial assets. This distinction matters because housing has unique risk characteristics. Jordá et al. (2019) show that real returns on housing and equities have exhibited very low covariance across many countries since World War II, implying substantial diversification gains from holding both asset classes. Consequently, even as the after-tax return on financial assets rises for wealthy French taxpayers following the reform, maintaining a significant share of housing in their portfolio may remain optimal as a hedge against financial risk. To test this explanation, I examine heterogeneity in the rebalancing response depending on taxpayers' baseline exposure to financial risk. Specifically, I construct a taxpayer-level proxy for financial risk exposure based on the average 2013–2015 share of capital income consisting of dividend income.[50] I then split the treatment group into taxpayers below and above the median of this measure, within 100 bins of baseline housing wealth. Results are displayed in Figure 7d. Consistent with the hypothesis that housing serves as a hedge against financial risk, taxpayers with greater pre-reform financial risk exposure tend to rebalance less toward financial assets following the reform than those with lower baseline financial risk.

6.4 Financial Literacy/Advisory

Financial knowledge and advice have been shown to correlate with better-performing portfolios (von Gaudecker, 2015). While I do not observe taxpayers' level of financial literacy directly, income tax returns indicate whether the return was filed by a tax preparer ("mandataire"), which is likely correlated with access to financial advice. Although previous work has examined the role of tax advisors and preparers in shaping households' and firms' tax compliance behavior and avoidance strategies (Erard, 1993; Battaglini et al., 2019; Bustos et al., 2023; Garbinti et al., 2023), much less is known about how they influence broader financial decisions, a dimension that I can explore in the context of the reform.

I explore the potential role of financial advice by examining whether taxpayers who use tax preparers respond differently to the new tax incentives. The results in Figure 7e reveal a clear difference: taxpayers using tax preparers are more than twice as responsive as others. This pattern suggests that taxpayers bene-

[50] Capital income is defined as total taxable income minus wage and pension income.

fiting from financial advice—proxied by the use of a tax preparer—were more responsive to the reform. This may reflect the effect of receiving financial advice, but is also consistent with taxpayers with higher financial capabilities self-selecting into using tax practitioners, in line with evidence of complementarity between financial advice and financial capability (Collins, 2012).

Note that a caveat of this analysis is that information on taxpayers' use of tax preparer services is only available from 2019 onward, that is, one year after the reform was implemented. As a result, it is not possible to rule out that some taxpayers who wished to take advantage of the new incentives introduced by the reform began seeking professional advice, and therefore started using tax preparers.

6.5 Ruling Out Alternative Explanations

The sample of French wealth taxpayers studied in this paper lies within the top 1% of the wealth distribution. Moreover, as shown in Figures 4 and 7a, the extent of portfolio rebalancing does not vary systematically with income or wealth. Taken together, these patterns suggest that fixed participation costs in financial markets (Campbell, 2006) and risk aversion (Maarten, 2020)—both typically weaker among high-wealth households—are unlikely to be first-order drivers of the relatively modest response documented here.

A further potential explanation for the limited rebalancing response draws on the finance literature on price anchoring. Households acting as sellers tend to anchor on their purchase price and are reluctant to sell below it, even when market conditions would justify doing so (Andersen et al., 2022; Badarinza et al., 2024). In principle, such anchoring could dampen the rebalancing response to the reform by discouraging households from selling real estate acquired at higher prices. However, this mechanism is unlikely to be at play in the French context: as shown in Figure 9, house prices rose steadily over the sample period, implying that most homeowners would have been selling at a gain relative to their original purchase price

Finally, taxpayers' baseline level of debt may also shape the magnitude of portfolio rebalancing. As emphasized by Martínez-Toledano (2022), less indebted taxpayers are better positioned to absorb the transaction costs associated with rebalancing. Figure 7f reports heterogeneity results splitting the treatment group between taxpayers with relatively high and relatively low baseline debt, within bins of baseline housing wealth. The two groups exhibit no clear differences in rebalancing responses.

7 Concluding Remarks

The stated aim of the 2017 wealth tax reform in France was to redirect households' savings from real estate to financial assets, considered as more productive for the economy. In this paper, I quantify the magnitude of portfolio reallocation following this reform and show that it has been modest. Combined with evidence that

financial asset ownership is far more concentrated among the wealthy than real estate (Roine and Waldenström, 2015; Saez and Zucman, 2016; Garbinti, Goupille-Lebret and Piketty, 2020), these results suggest that exempting financial assets from wealth taxation primarily functioned as a tax break for wealthy households rather than as the intended catalyst for economic reallocation.

The theoretical case for taxing real estate differently from other assets has deep historical roots. In the 19th century, Henry George advocated for a unique tax on land value, arguing it could generate sufficient revenue to eliminate all other taxes (George, 1879). His central insight—that land's fixed supply makes it inelastic to taxation—aligns with classic optimal taxation theory, which prescribes heavier taxation of less elastic factors (Ramsey, 1927; Diamond and Mirrlees, 1971). While taxing solely land presents practical valuation challenges, taxes on real estate—traditionally viewed as less elastic than other forms of capital—share much of the appeal of George's proposed land tax. However, the theoretical rationale for higher taxes on housing wealth could be weakened in the presence of strong cross-base responses, namely if taxpayers respond by substituting away from real estate toward financial assets.

By leveraging the French wealth tax reform, I provide the first empirical estimates of the cross-elasticity between real estate and financial assets. My findings reveal a strictly positive but modest cross-elasticity, suggesting that the efficiency cost of taxing real estate more heavily than other assets are likely to be overall limited.

The French *Impôt sur la Fortune Immobilière* created by this reform represents a modern progressive property tax with several innovative features rarely seen in combination: a progressive schedule at the household rather than the property level, market-value assessment, inclusion of both directly and indirectly held properties, and debt deductibility. I show that such a tax—with top rates reaching 1.5%—does not trigger significant portfolio rebalancing even among the wealthiest households, suggesting it has substantial revenue-raising potential. A key lesson from these findings is that progressive property taxation deserves greater attention in both academic research and policy discussions as a potentially efficient and more equitable tax instrument than existing taxes on real estate.

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	All wealth taxpayers		Treatment	Control
	2016	2018	2016	2016
	(1)	(2)	(3)	(4)
Age	69	69	73	64
% Married	58	58	57	33
% Living in paris	18	26	36	0
% Retirees	69	67	76	1
% Wage Earners	35	36	29	2
% firm owners	15	23	39	2
% Income taxpayers	98	98	96	59
Gross income	151,944	262,600	270,878	49,939
Pension benefits (%)	42	34	34	2
Wages (%)	19	17	12	1
Rental income (%)	24	36	38	91
Financial capital income (%)	14	13	15	6
Other (% of gross income)	0	1	1	0
Tax preparer (2019)	14	18	116	114
Net taxable wealth	2,777,060	2,327,498	6,486,420	2,876,221
Housing assets (%)	48	82	55	96
incl. Primary residence (%)	19	25	14	5
Financial assets incl. indirectly held real estate (%)	52	17	45	4
Liabilities (%)	6	5	5	6
% benefited from tax ceiling	3	0	10	0
Wealth tax	11,374	9,715	38,622	15,580
Wealth tax rate (%)	0.32	0.32	0.56	0.40
Number of tax units	350,530	132,461	21,173	1,255

Table 1: Baseline Summary Statistics - 2016 and 2018

Notes: This table presents descriptive statistics for all ISF taxpayers in 2016 (column 1), all IFI taxpayers in 2018 (column 2) and for the treatment and control groups in 2016 (columns 3 and 4, respectively). In 2016, taxpayers with net taxable wealth below 2.57 million euros don't have to report their wealth by asset type. In column (1), the wealth decomposition is therefore based on the portfolio structure of 2016 wealth taxpayers observed in 2010, before the implementation of the simplification threshold. The wealth decomposition in column (4) is based on non-resident taxpayers who file in the detailed returns (58%). Information on whether the return was completed by a third party is only available from 2019 onward, so values for 2019 are reported in the table.

	Total housing				No primary home			
	All	All	All	Same Bracket	All	All	All	Same Bracket
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Semi-elasticity wrt $(\tau_H - \tau_F)$	4.70***	3.18***	4.79***	4.97***	7.20***	4.86***	7.17***	7.64***
	(0.85)	(0.57)	(0.84)	(0.87)	(0.91)	(0.61)	(0.91)	(0.98)
Semi-elasticity wrt $(\tau_H - \tau_F)R$	0.24***	0.19***	0.24***	0.25***	0.36***	0.29***	0.36***	0.38***
	(0.04)	(0.03)	(0.04)	(0.04)	(0.05)	(0.04)	(0.05)	(0.05)
Elasticity wrt $(1 - \tau_F)$	4.23***	2.60***		4.74***	6.46***	3.99***		7.29***
	(0.75)	(0.46)		(0.82)	(0.80)	(0.49)		(0.92)
Elasticity wrt $(1 - \tau_H)$			0.85				-0.26	
			(0.95)				(1.42)	
Flat tax	No	Yes	No	No	No	Yes	No	No
Account for $\Delta\tau_H$	No	No	Yes	No	No	No	Yes	No
Household FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N treated	15,623	15,623	15,623	9,509	15,623	15,623	15,623	9,509
N control	1,104	1,104	1,104	1,104	1,104	1,104	1,104	1,104

Table 2: Cross-Elasticity Estimates

Notes: This table reports estimates of the cross-elasticity of real estate with respect to the tax differential between real estate and financial assets, as defined in Section 5.1. To clarify that they capture a positive reallocation from housing to financial assets, the table reports $-\epsilon^{H,F}$, that is, the cross-elasticities multiplied by -1, so that they are expressed as positive values. Estimates are based on total taxable real estate (columns 1–4) and real estate net of primary residence (columns 5–8). Rows 1 and 3 refer to the baseline cross-elasticity (semi-elasticity with respect to $(\tau_H - \tau_F)$) and the elasticity with respect to the net-of-tax rate on financial assets $(1 - \tau_F)$, respectively; row 2 refers to the semi-elasticity with respect to the differential tax rate on asset returns $(\tau_H - \tau_F)R$. Row 4 displays the housing wealth own-elasticity, instrumenting the change in the marginal tax rate on housing using taxpayers subject to the wealth tax ceiling before the 2017 reform. Columns 1 and 5 report the baseline estimates; columns 2 and 6 additionally account for the flat tax on financial capital income; columns 3 and 7 control for the change in the marginal tax rate on housing; columns 4 and 8 restrict the sample to treated taxpayers who experienced no change in their marginal tax rate on housing. All specifications are estimated by 2SLS, instrumenting the tax rate differential based on pre-reform assignment status, on a balanced sample of wealth taxpayers over 2013–2022.

Authors	Variation	From	To	Data	Time horizon	Initial estimate	Transformation	Cross-elasticity
Alan et al. (2010)	Income tax	Interest bearing assets, stocks, mutual funds	Retirement accounts and educational saving accounts	Survey, cross-section structure	–	10 pp increase in marginal income tax rate leads to a 2.5% increase in tax-favored assets	Assuming a 5% rate of return on assets	5
Alvaredo and Saez (2009)	Wealth tax	Business assets (small participation)	Business assets ($>$ 15% ownership)	Administrative data, cross-section structure	9 years	The fraction of business benefiting from the exemption goes from 33% to 66% due to shifting responses	Dividing the relative increase of exempt stocks (100%) by average tax differential for the top 1% (0.8%)	125
Giglio et al. (2021)	Expected equity returns	financial wealth	Equity wealth	Survey, and administrative data, panel structure	1 year	A 1 percentage point increase in expected equity returns yields only a 0.7 percentage point increase in equity share	Given baseline equity share of 67.5%, it translates into a 1% increase in equity wealth	1
Guiso, Fagereng and Ring (2024)	Wealth tax	All wealth	Equity wealth	Administrative data, panel structure	6 years	A unitary increase in the equity premium increases the unconditional stock market share by 6.97 pp	Given unconditional stock market share of 7.9% (0.213 * 0.371), increase in stock market share: 6.97/7.9 = 88%	88
Mas-Montserrat, Durán-Cabré and Esteller-Moré (2025)	Wealth tax	All wealth (likely non-exempt business assets)	Exempted business assets	Administrative data, panel structure	4 years	A 0.1 pp increase in the 2011 average tax rate leads to a 1.79 pp rise in the share of exempt assets	Given 2011 share of exempt assets of 45%, the increase leads to a 4% evolution. Then, multiply by 10	40
Micó-Millán (2024)	Inheritance tax	Financial assets (mostly)	Business assets (mostly)	Administrative data, panel structure	–	A 1 pp increase in the inheritance tax differential leads to a 17% increase in the share of tax-favored assets	–	17
Poterba and Samwick (2003)	Income tax	Taxable financial assets (bonds, equity, other)	Tax-favored financial assets (equity & bonds)	Survey	–	In 1995, a 10 pp increase in a household's marginal tax rate on ordinary income raises their tax-deferred equity wealth by 4.1%, their tax-deferred bonds by 3.7% and their tax-exempt bonds by 28.1%	Assuming a 5% rate of return on assets	7.4–56.2
Chetty et al. (2014)	Income tax deductions	Capital pension accounts	annuity pension accounts ($\approx$ 50%) and other taxable acounts ($\approx$ 50%)	Administrative data, panel structure	3 year	14 pp reduction in deductible contribution leads to a 48% reduction in capital pension contributions	–	–
Engelhardt and Kumar (2011)	Variation in non-pension wealth	Non-pension wealth	Pension wealth	Survey, cross-section structure	–	An additional dollar of pension wealth reduces household nonpension wealth by 62 cents	–	–
Poterba, Venti and Wise (1995)	Exogeneous determination of 401(k) eligibility status	Non-pension wealth and Individual Retirement Accounts (IRA)	401(k) wealth	Random sample of U.S. population, cross-section structure	–	Households do not treat 401(k) saving as a close substitute for conventional financial saving. Moreover, even 401(k)s and IRAs, arguably more similar, are not close substitutes.	–	–

Table 3: Portfolio reallocation from other studies into cross-elasticity estimates

Notes: This table summarizes estimates of asset-shifting responses to changes in differential returns across assets. Apart from Giglio et al. (2021), all changes in differential returns are driven by tax reforms, which generate variation in income, wealth, or inheritance tax differentials across asset types. These tax changes arise either from asset-specific tax adjustments or from changes in the tax schedule that modify the tax differential between taxable assets and tax-exempt (or tax-favored) assets. To facilitate comparison across studies, I translate the authors' original estimates into cross-elasticities; the methodology used for this translation is reported in the table. A cross-elasticity estimate of 5 can be interpreted as follows: a 1-percentage-point increase in the tax differential between two asset classes leads to a 5% increase in holdings of the tax-favored asset. Finally, note that the cross-elasticity estimated in this paper is expressed as the percentage change in holdings of the highly taxed asset (housing). However, given that the baseline share of financial assets in the treated group is approximately one half (see Table 1, column 3), it can be symmetrically interpreted as the corresponding increase in holdings of the tax-favored asset (financial assets), and directly compared to estimates provided here. Chetty et al. (2014) do not observe pension wealth but only pension contributions, which makes it impossible to translate their results into a cross-elasticity. However, their findings suggest a large cross-elasticity of savings flows.

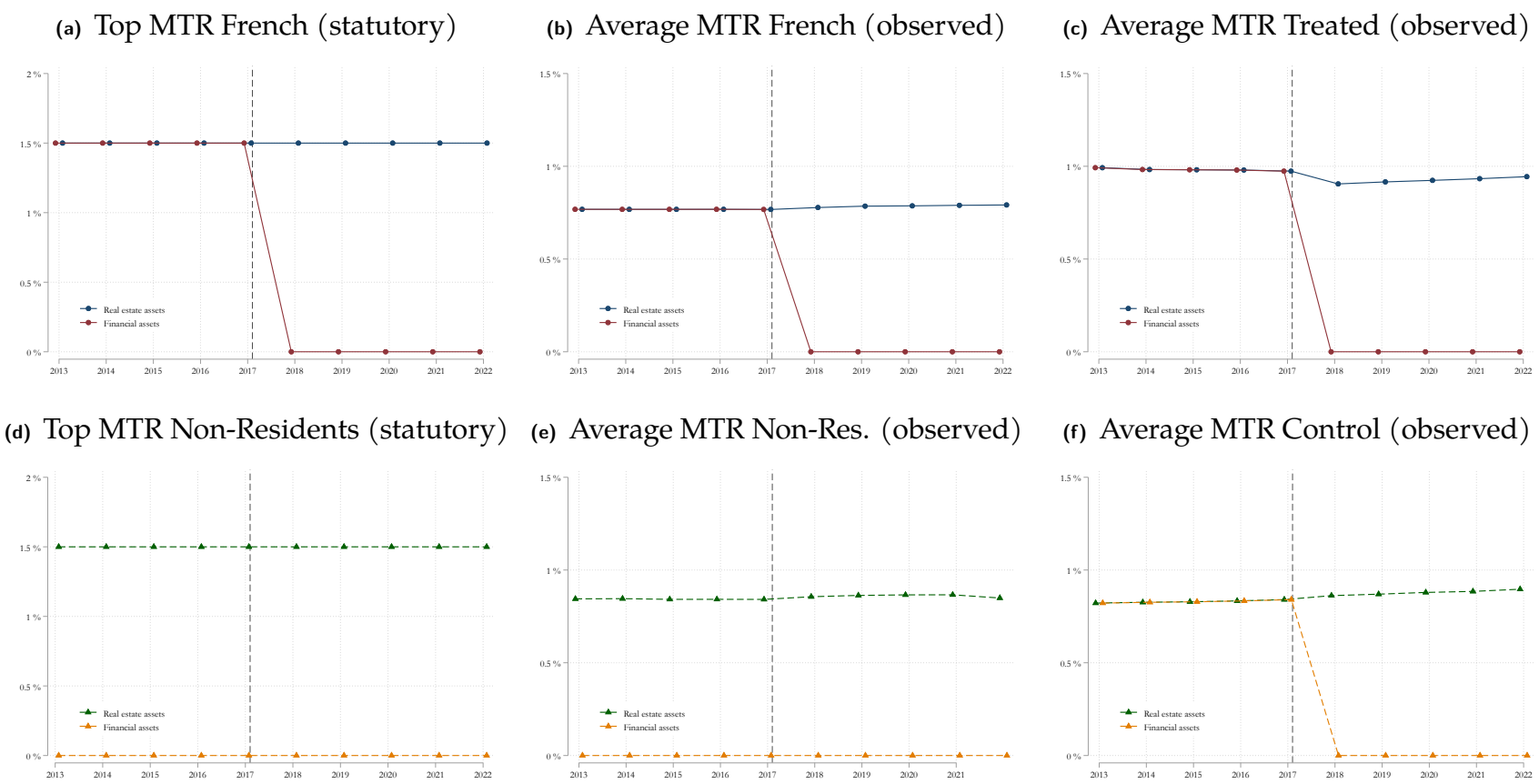


Figure 1: Observed and Statutory Marginal Tax Rates

Notes: This figure shows the evolution of marginal tax rates by asset class and residence status. Panels a) and d) present the statutory top marginal wealth tax rates for French and non-resident taxpayers, respectively. Panels b) and e) display the observed average marginal tax rates for French and non-resident taxpayers who are liable to the wealth tax. Panels c) and f) show the observed average marginal tax rates for the treated and control groups. By construction, statutory and observed tax rates on real estate and financial assets held by French residents are nearly identical before the 2017 reform. For non-residents, the graphs report marginal tax rates on real estate located in France. Some exceptions to the exemption of financial investments from the wealth tax for non-residents exist, but they are rare (see Appendix section A1). The modest drop in the average marginal tax rate on real estate observed after the reform for the treatment group (panel e) reflects the reduction in the size of the tax base combined with the progressivity of the tax schedule. For French taxpayers overall (panel c), however, this decline is offset by the fact that fewer taxpayers benefit from the tax ceiling after the reform, resulting in higher marginal tax rates for these households. Appendix Figure 10 displays top MTR by asset when taking income taxation—hence the 2018 flat tax reform—into account.

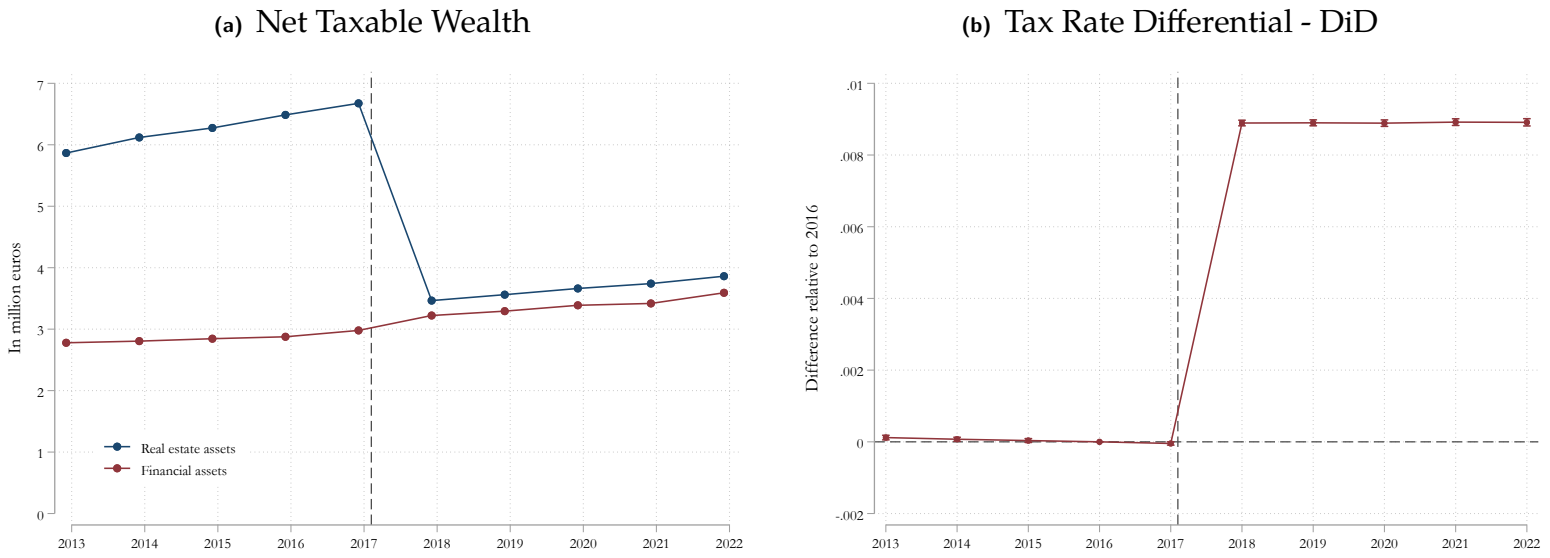


Figure 2: First Stage - Tax Base and Tax Rates

Notes: This figure shows the evolution of the wealth tax base and of the tax differential between real estate and financial assets before and after the reform. Panel a) presents the time series of net taxable wealth for French and non-resident taxpayers. Panel b) plots the coefficients obtained from equation (1), comparing French to non-resident taxpayers, using as outcome variable the difference in marginal wealth tax rate between real estate and financial assets.

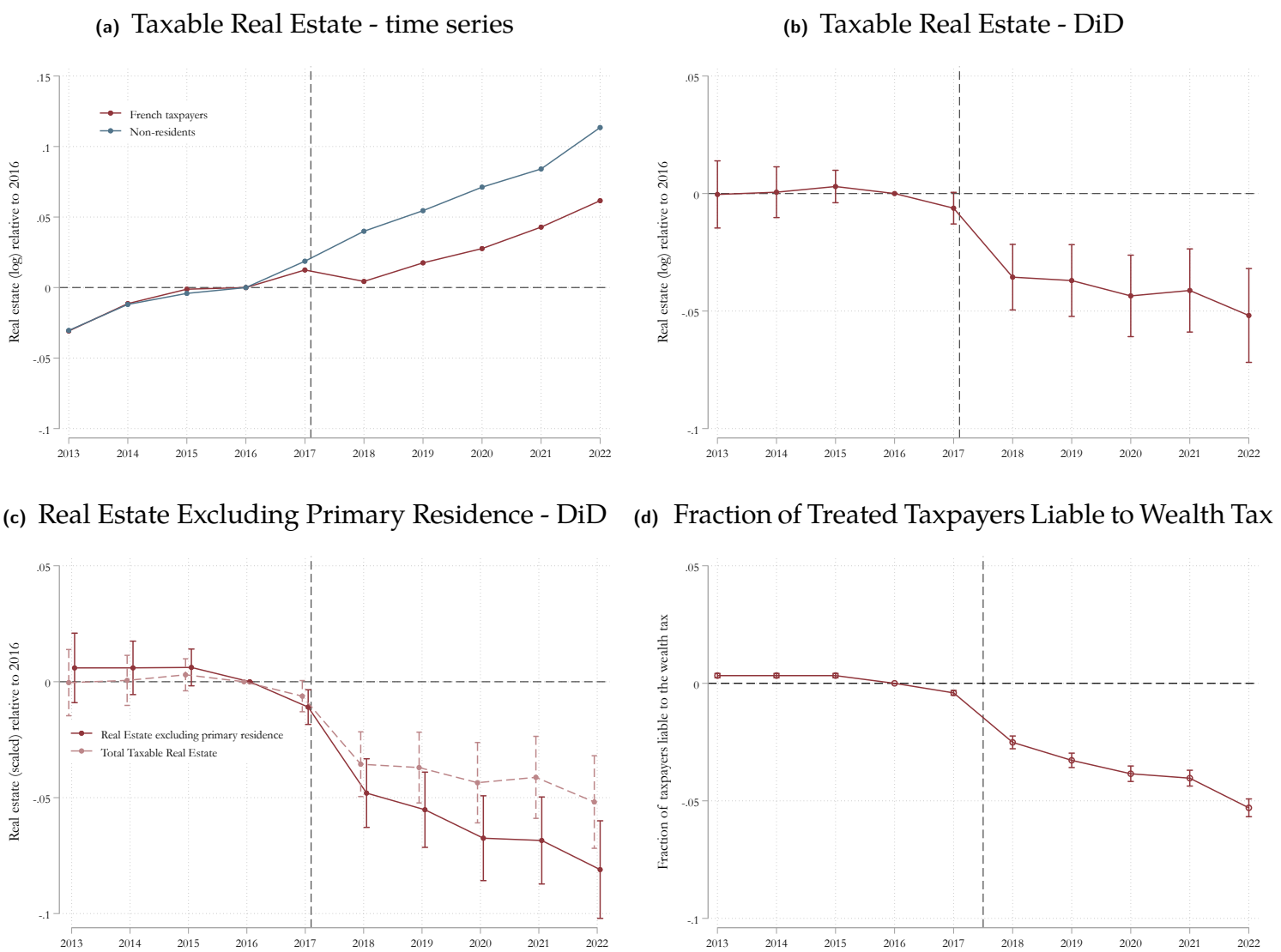


Figure 3: Average Responses to the 2017 Wealth Tax Reform

Notes: This figure shows the evolution of the stock of real estate held by French vs. non-resident taxpayers between 2013 and 2022. Panel a) shows the time series of taxable real estate (in log). The stock of real estate evolves strikingly similarly between the two groups before the reform and starts to diverge immediately after. Panel b) display coefficients obtained from equation (1) using total taxable real estate as outcome variable, while panel c) shows results when the outcome variable equals taxable real estate minus primary residence. On average, the French taxpayers experienced a decline of 5.1% in their stock of housing wealth compared to the control group five years after the reform is introduced, the decline reaching 7.8% when studying real estate wealth that is not primary residence. These figures are obtained from a balanced sample of French and non-resident taxpayers. Panel d) displays the number of treated taxpayers liable to the French wealth tax over the 2013-2022 period, normalized to 0 in 2016. The sample here is restricted to taxpayers liable to the French personal income tax all years between 2013 and 2022 (i.e. excluding deceased taxpayers).

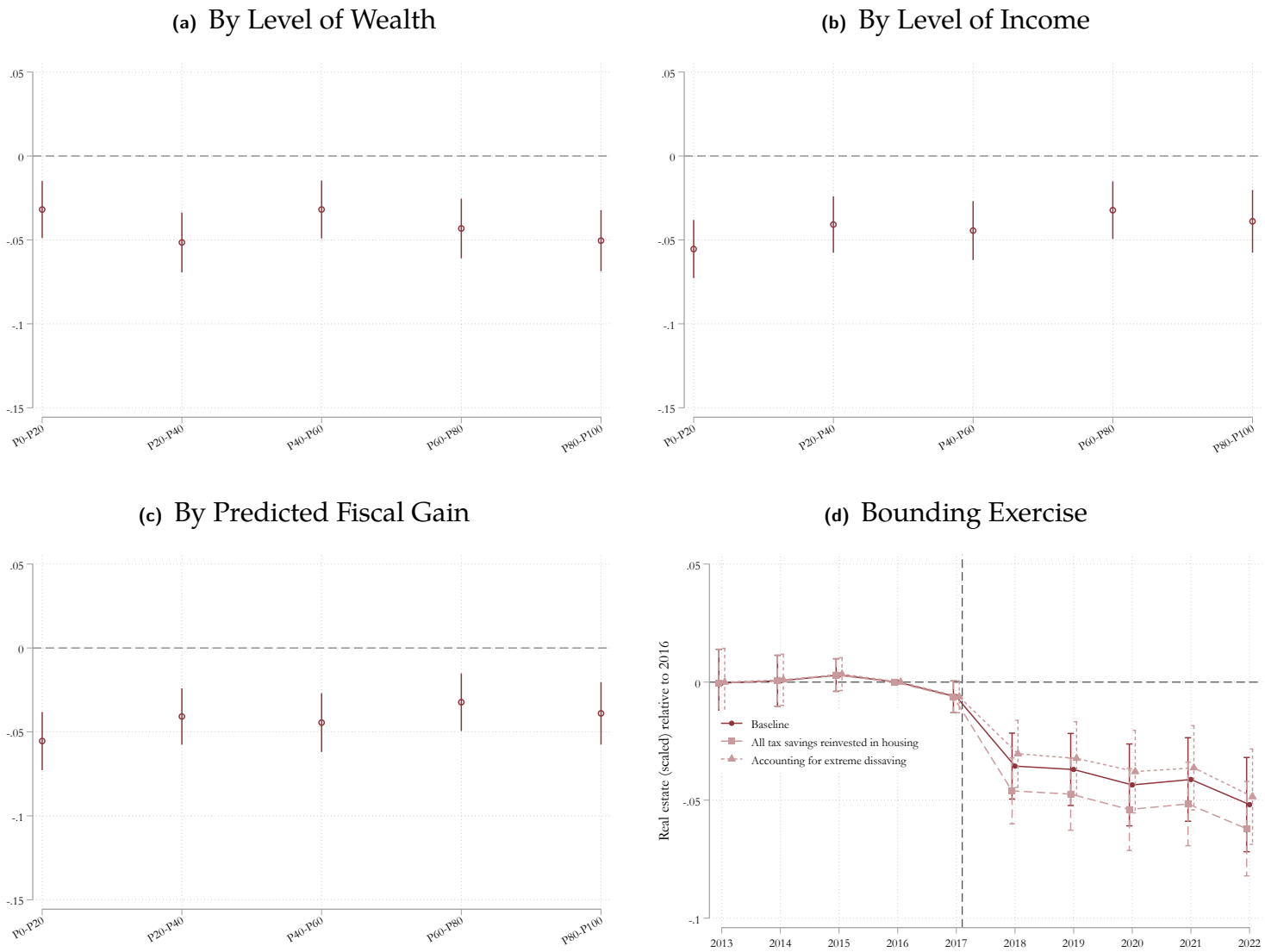


Figure 4: Average Responses to the 2017 Wealth Tax Reform

Notes: Panel a) ,b) and c) fromp this figure show the heterogeneity in the response to the 2017 policy change when ranking treated taxpayers by quintiles of various pre-reform distributions (2013-2015 average). More specifically, taxpayers are ranked by level of pre-reform taxable wealth (panel a), taxable income (panel b), predicted fiscal gains from the reform (scaled by baseline wealth tax liabilities) (panel c). Each regression estimates the compact version of equation (1) using the full control group of non-residents. Predicted fiscal gains are very correlated with baseline portfolio allocation, which itself affects the magnitude of the response. Thus, quintiles of predicted fiscal gains are defined within percentiles of baseline housing wealth. The fully dynamic heterogeneity graphs are shown in Appendix Figure 13. Panel d) shows a bounding exercise and displays the estimated reallocation response when assuming i) that 100% of the predicted fiscal gains from the reform is reinvested in real estate, and ii) an extreme 1:1 dissaving effect on housing, meaning that 1 euro in tax reduction leads to 1 euro of dissaving in housing.

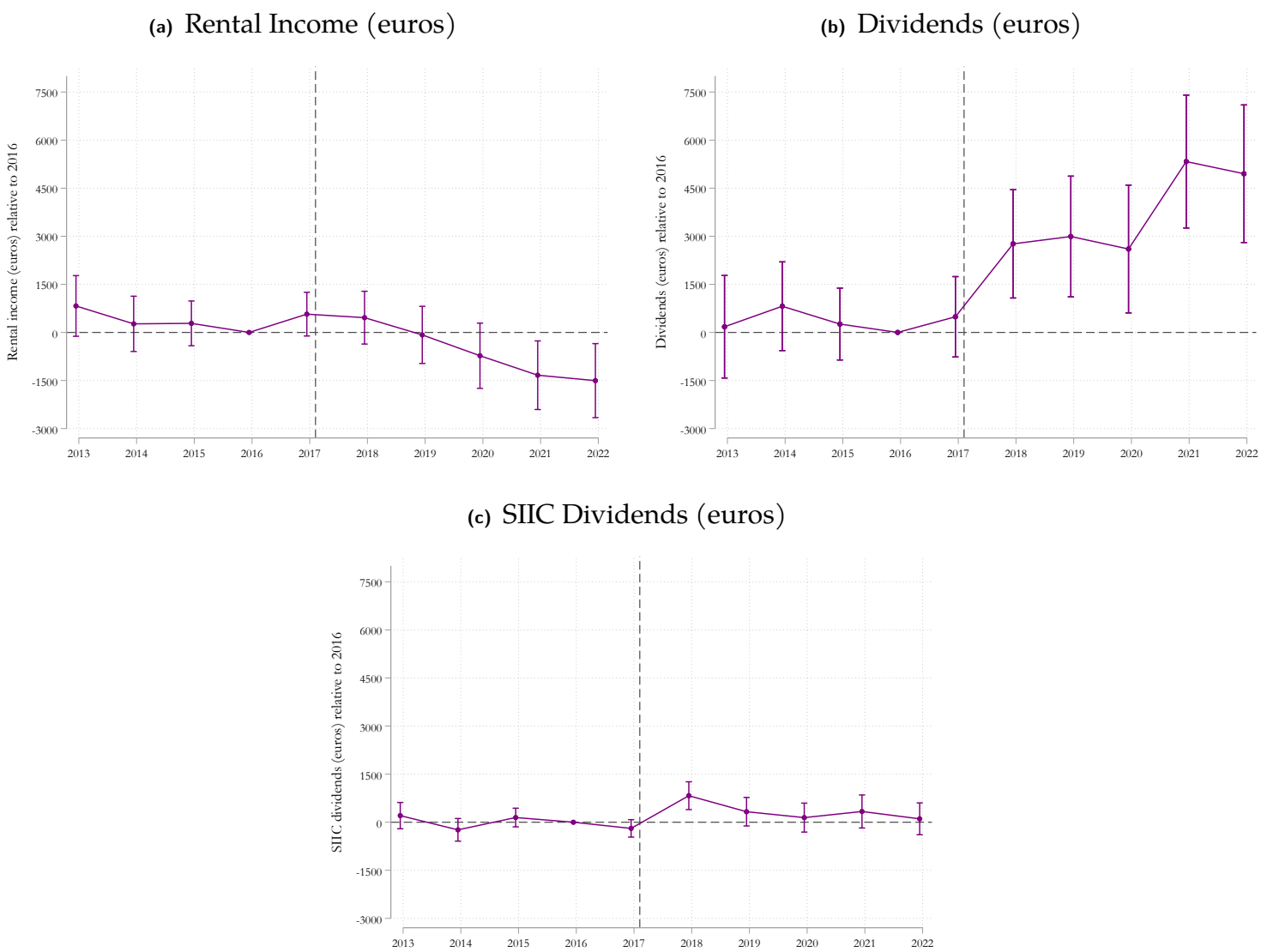


Figure 5: Capital Income Responses to the 2017 Wealth Tax Reform

Notes: This figure shows the evolution (in euros) of various types of capital income received by taxpayers from the treatment group relative to a control group of French taxpayers who own less than 1.3 million euros—the exemption threshold—in real estate before the reform. Panel a) shows the evolution of rental income, panel b) displays dividends, panel d) shows dividends paid out pay SIIC companies. Specification for panels a) and c) include controls for baseline level of non-primary housing interracted with year dummies. Specification for panel b) includes controls for for baseline equity wealth and baseline financial income interracted with year dummies. All specifications control for taxpayer's age. All outcome variables are winsorized at the 99% level of non-zero values. Results for the specification in log are shown in Appendix figure 14.

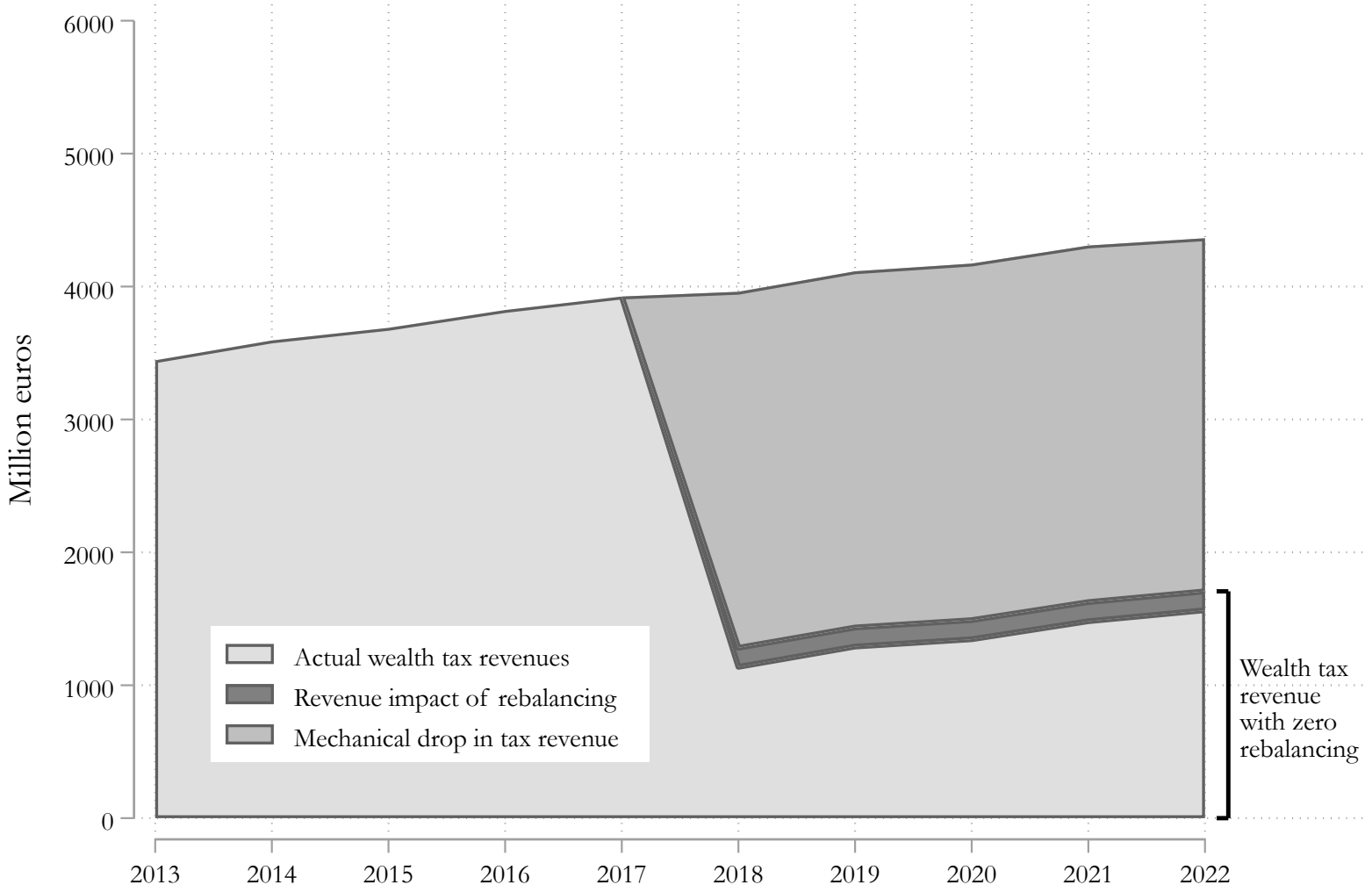


Figure 6: Decomposition of the Wealth Tax Revenue Losses Associated with the 2017 Reform

Notes: This figure shows the evolution of wealth tax revenues in France between 2013 and 2022 and decomposes the post-2017 drop into mechanical and behavioral components, following the method detailed in section 5.4. The intensive margin cross-elasticity used here equals 4.65, while the extensive margin (semi-)elasticity equals 16.7. The observed drop in net wealth tax revenues between 2017 and 2018 reaches almost 2.9 billion euros. The mechanical part of this drop represents 2.67 billion euros, while an additional decrease of 210 million euros is due to behavioral adjustments to the reform. This figure excludes wealth tax liabilities of non-resident taxpayers.

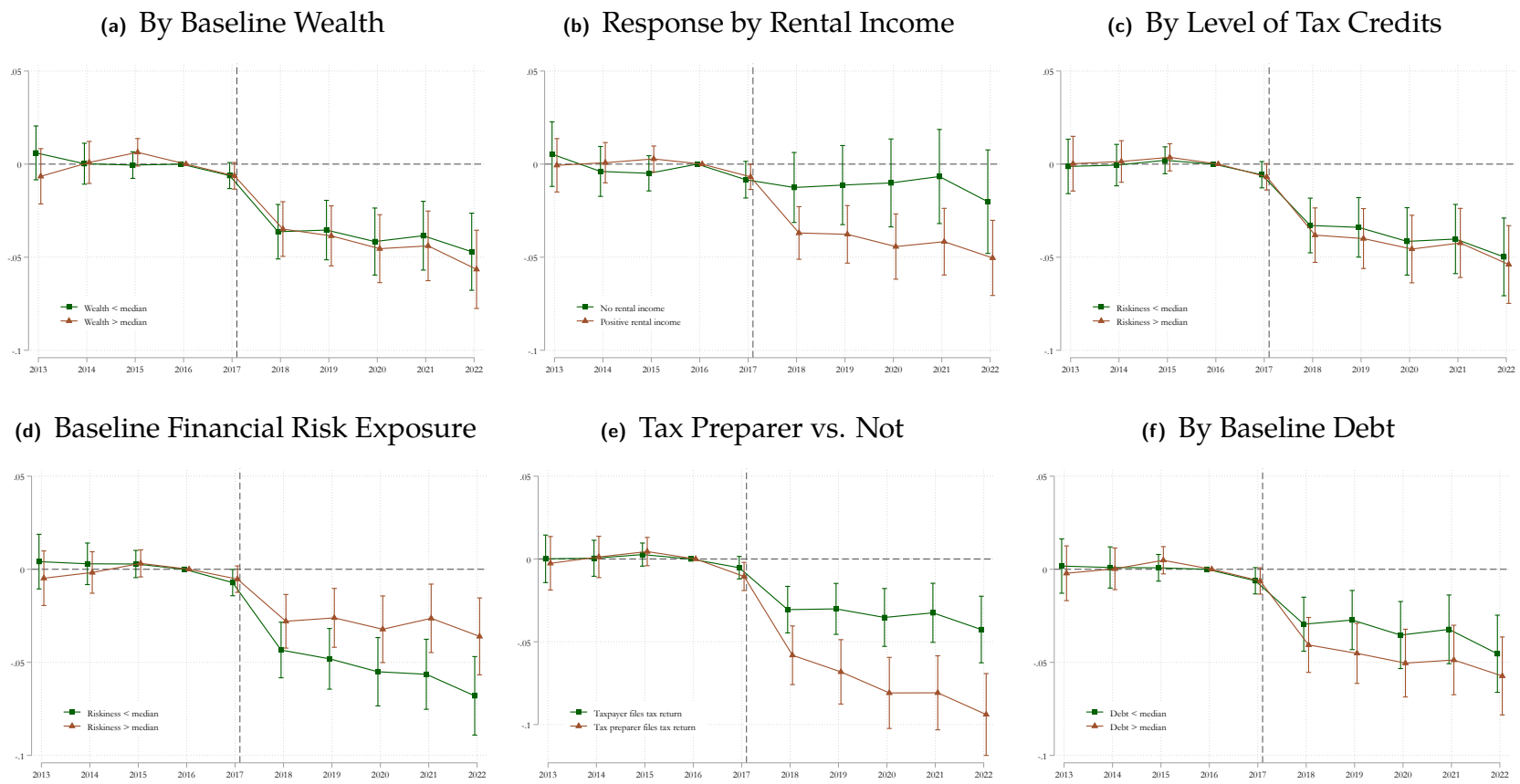


Figure 7: Heterogeneity Analysis

Notes: This figure shows the heterogeneity in the response to the 2017 reform by average level of pre-reform non-primary home share (panel a) and rental income (panel b) between 2013 and 2015. Non-primary home share is defined as the average share of total housing wealth that is not primary housing between 2013 and 2015. Pre-reform rental income refers to the 2013-2015 average level of gross rental income defined as the sum of "micro foncier", "foncier régime réel", "meublé non professionnel" and "déficit foncier". Each graph displays coefficients obtained from the estimation of equation (1) using the full control group. Panel a) shows results by quintiles of pre-reform non-primary home share. Taxpayers located at the top of the distribution (p80-p100) are likely to hold a high share of their housing assets in the form of investment properties. Panel b) shows the heterogeneity in responses to the 2017 from taxpayers with no pre-reform rental income (<1000 euros) vs. taxpayers with positive rental income (> 1000 euros). Households benefiting from wealth tax ceilings between 2013-2017 are exluded (in panel b), as these might artificially reduce taxable income. Appendix figure **??** shows that using net—rather than gross—rental income and including taxpayers benefiting from the ceiling has little effect on the estimated reallocation.

Appendix

A1. Wealth Taxation in France

The Impôt de Solidarité sur la Fortune

The deductibility of debts. Debts existing on January 1^{st} of the tax year that have been contracted by the taxpayer can be deducted from the tax base, provided that they are related to assets subject to the wealth tax.[51] This excludes debts related to business assets or artworks. If a debt relates to a partially exempted asset, the amount deductible is proportional to the fraction of the the asset subject to the tax (e.g. 70% for primary home). Fiscal debts (personal income tax, inheritance tax, wealth tax, property tax and some social security contributions) can also be deducted.

The wealth tax cap. There exists a ceiling mechanism that limits the total amount of income and wealth tax liabilities a taxpayers has to pay relative to their net taxable income. This percentage was 70% when the mechanism was first introduced and was set to 75% from 2013 onwards. It means that after 2013, a taxpayer cannot pay as income and wealth taxes for a given year t more than 75% of the taxable income they received in year t-1. This mechanism is still in force today.

The 2017 Reform

Real estate excluded from IFI tax base. First, assets that qualify as business wealth are exempted. This refers to real assets assigned to the industrial, commercial, craft, agricultural or professional activity of the company owning them. In case of mixed real estate assets (used both for business and privately), the share of the asset's value not used for the professional activity is taxed. Second, certain shares of companies or organisations holding real estate may be exempted from wealth taxation. Three types of shares fall in this category. First, when a taxpayer owns less than 5% of the shares and voting rights in a listed real estate investment company (e.g. *Sociétés d'Investissement Immobilier Cotées*). Second, when a taxpayer owns less than 10% of the shares and voting rights of a company whose activity is industrial, commercial, craft, agricultural or liberal. Third, for some types of collective investment undertakings when i) the taxpayer owns less than 10% of rights of the collective investment undertaking, and ii) the assets of the undertaking for collective investment consist of less than 20% of taxable real estate. Third, real estate held in specific trusts. Properties held through a trust are in most cases subject to IFI, except for i) irrevocable trusts which solely benefit certain charities and ii) pension trusts under a pension scheme set up by a company for its employees. More details can be found in Dupas (2020).

[51] Note however that the capital and interests from a consumption loan can be deducted from the tax base.

Changes in the deductibility of debts. The 2017 reform introduces a ceiling to the amount of debt deductible from the wealth tax base. This affects taxpayers with a taxable wealth above 5 million euros and an amount of debt exceeding 60% of their taxable capital value. For these taxpayers, only 50% of the balance of the loan is deductible above the 60% threshold. For example, if a taxpayer owns 10 million euros in taxable wealth with a mortgage of 8 million euros, the the 60% threshold is 6 million euros. Above 6 million euros, only 50% of the debts is deductible (50% of 2 million euros = 1 million euros). The total amount of deductible debt will be 6 million euros + 1 million euros = 7 million euros, instead of 8 million euros before the reform. Besides, the entire capital of in fine loans could be deducted from the ISF tax base.[52] After the 2017 reform, the amount deductible is subject to a digressive deduction over the duration of the contract. Finally, some taxes remain part of the deductible fiscal debts (property tax, wealth tax, tax on empty dwellings) but some others are excluded (personal income tax, social security contributions).

Wealth Taxation of Non-Residents

Taxation of real estate. Before and after the 2017 reform, real estate wealth owned by non-residents in France is subject to the wealth tax—above the 1.3 million euros exemption threshold. In the case of indirect ownership, only shares of real estate companies (when more than 50% of the company's assets is composed of French real estate) or shares in companies in which their stake exceeds 50% were subject to the ISF. After the 2017 reform, all company shares are subject to IFI, in proportion to the share of real estate owned (with an exemption for shareholdings below 10% in operational companies).

Taxation of financial assets. Even before 2018, the non-residents benefited from a full wealth tax exemption on the financial assets they owned in France (provided that these assets were linked to a company located in France). However, this rule did not apply to shares that represented a *substantial participation* in a French company, which generally refers to investors owning more than 10% of a firm's capital. In most cases, participations between 10% and 25% only would be subject to the wealth tax, as the shares above the 25% of capital ownership threshold would typically qualify as business assets. To ensure a clean control group, I exclude all non-residents who report any significant taxable financial assets during my sample period. Specifically, I remove non-residents who ever report financial assets exceeding 5% of their taxable wealth (boxes CF, CG, CM, CC, CK, CJ, CI, CH), including in 2010, before the introduction of simplified reporting requirements. In addition, indirectly held real estate is reported together with some financial assets (boxes CE and CD). To minimize the possibility that non-residents own taxable financial assets before the reform, I exclude all non-residents who ever report more than 50% of their taxable wealth in boxes CE and CD. Note that many of

[52] Types of debt when the repayment of the capital happens at the end of the contract.

these reported assets likely represent either indirectly held real estate or real estate incorrectly classified as financial wealth (evidence of misreporting includes non-residents incorrectly listing properties as 'primary housing'—a classification impossible for non-residents). The first restriction reduces the size of the control group by 15% while the second restriction reduces it by an additional 26%.

A2. Data Processing

Handling changes of fiscal identifiers The panel structure of the data used in this paper makes it possible to follow taxpayers from year to year. A unique tax identifier is assigned to each household as well as to each spouse within the household. Importantly, when the household structure changes (divorce, marriage etc.) as well as when a household changes their *département* of residence, the tax identifier also changes. Although it is not systematic, this also applies when households migrate.[53] Thus, some individuals appear in several fiscal households in a given year. To follow the maximum number of taxpayers over time, I use the first spouse identifier ("spi1_c") instead of the household identifier, take the max of wealth variables and the sum of income variables reported by the household(s) of an individual in a given year. This allows me to take care of cases for which the income or wealth reported by a given household is split or missing in a given year simply because they move out of their département of residence during the year.

Handling inconsistencies between ISF and IFI data Wealth information in this paper is based on two separate wealth tax datasets. The first one is the ISF dataset ("isf_ifi_2006_2020_casd"), which includes ISF tax returns (2006-2017) and has been extended to 2020. The second one is the IFI dataset ("panel_ifi_2023_diff_complet"), covering wealth tax returns after the reform only (2018-2022). During the years over which both datasets overlap (2018-2020), approximately 10% of households appear in only one dataset as wealth taxpayers. Non-residents are particularly affected, representing 30% of these inconsistent cases. For most discrepancies, I identified that the taxable wealth reported by a household in one dataset exactly matches amounts reported under a different tax identifier in the other dataset. By matching these cases, I reduced inconsistencies to just 0.1% of households. Approximately 30% of remaining cases with inconsistent wealth information are non-residents (130 taxpayers).

Handling remaining missing wealth information in some years These inconsistencies raised concerns about potential missing wealth information for certain taxpayers/years, particularly around the database transition coinciding with the reform period. Importantly, this does not affect my main estimates of portfolio rebalancing responses, which which rely on a balanced sample of wealth taxpayers.

Correspondence with the French tax administration resulted in a new IFI dataset release that included previously missing taxpayers, primarily non-residents. Though this attenuated the issue, "holes" remain in some taxpayers' tax payment histories that likely stem from data limitations rather than actual reporting behavior. For example, among non-residents liable for wealth tax in 2013, the probability of having a year with missing taxable wealth—despite positive wealth in both preceding and following years—peaks in 2018.

[53] Note that in the case of migration, the individual tax identifier may also change.

To address this, I exclude wealth taxpayers with any one-year gap in their tax payment history after 2017. While this restriction has no effect on the cross-elasticity estimated in this paper, it ensures that the series of taxpayers liable to the wealth tax over time do not suffer from this data limitation, thus providing a more sensible picture of the potential extensive margin response to the reform.

A3. Variables Definitions

The variables used in this paper come from the wealth tax and income tax returns.

Wealth variables:

- *Net taxable wealth:* It is defined as the difference between gross wealth and debts and is reported under box "HI" of the wealth tax return.

- *Taxable real estate:* Since real estate held indirectly is reported together with financial assets before the reform, I restrict the analysis to directly held real estate. This is defined as the sum of holdings reported under boxes AB ("résidence principale"), AC ("autres immeubles"), BD ("bois, forêts et parts de groupements forestiers"), BF and BG ("biens ruraux loués à long terme"), BI and BJ ("parts de groupements fonciers agricoles et de groupements agricoles fonciers"), and BK ("autres biens"). These categories refer exclusively to *directly held* real estate assets. When using real estate as the outcome variable, I use boxes BE and BH instead of BF, BG, BI, and BJ to ensure consistency throughout the entire period. Importantly, many control group taxpayers file simplified wealth tax returns, meaning the exact portfolio composition remains unobserved for most non-residents in the sample. I therefore define taxable real estate for non-residents as their gross taxable wealth. As shown in Appendix Figure 12d, results using directly held real estate as the outcome variable and restricting the control group to non-residents who file detailed returns yield estimates comparable to the baseline estimates.[54]

- *Tax credits:* it is defined as the sum of charitable giving, direct and indirect investment in small and medium-size enterprises and tax reduction due to the tax ceiling, corresponding to boxes NH, ND, MU, MW, MY, NB and PV of the wealth tax return.

Capital income variables:

[54]Importantly, there are indications that information on the exact portfolio composition of non-residents may contain errors and asset misclassifications. Evidence of such issues includes a non-negligible share of non-residents incorrectly listing their properties as "primary housing"—a classification impossible for non-residents. Similar misclassification likely occurs between directly and indirectly held housing assets, with some non-residents potentially reclassifying their assets as indirectly held after 2018, when the tax base for indirectly held real estate becomes slightly more comprehensive (see section section A1). To prevent these data limitations from affecting estimates, I exclude non-residents who consistently report zero indirect real estate (boxes CD and CE of the tax return) but suddenly report positive indirect real estate in 2018.

- *Rental income:* Rental income is defined as the sum of income reported in boxes 4BE ("micro foncier") and 4BA ("revenus fonciers imposables") in the form 2042.
- *Dividends:* I follow the same definition as Bach et al. (2021*b*) and define dividend income as the sum of amounts reported in boxes 2DC and 2DA in the form 2042. Declared dividends represent gross dividend income, prior to any tax deductions or withholding taxes applied to this income.
- *Interests:* I define interest income as the income reporte under box 2TR in the form 2042, refeering to "Intérêts et autres produits de placement à revenu fixe".
- *Dividends from SIIC:* Dividends received from SIIC must be reported in box 2TS ("produits des contrats d'assurance-vie d'une durée inférieure à 8 ans et distributions") of the income tax return rather than with other dividends. This box also includes other income elements, though these are likely rare due to their relatively high taxation. To ensure consistency throughout the entire period, I add income reported under boxes 2XX, 2YY, and 2ZZ from 2018 to this income category.

A4. Additional Restrictions on the Control Group

As mentioned in subsection 2.3, although non-residents benefited from a full exemption on the vast majority of their financial investments before the reform, there were some rare exceptions. To ensure a clean control group, I exclude all non-residents who report any significant taxable financial assets during my sample period. Specifically, I remove non-residents who ever report financial assets exceeding 5% of their taxable wealth (boxes CF, CG, CM, CC, CK, CJ, CI, CH), including in 2010, before the introduction of simplified reporting requirements. In addition, indirectly held real estate is reported together with some financial assets (boxes CE and CD). To minimize the possibility that non-residents own taxable financial assets before the reform, I exclude all non-residents who ever report more than 50% of their taxable wealth in boxes CE and CD. This approach provides a conservative definition of the control group, as many of these reported assets likely represent either indirectly held real estate or real estate incorrectly classified as financial wealth (evidence of misreporting includes non-residents incorrectly listing properties as 'primary housing'—a classification impossible for non-residents). The first restriction reduces the size of the control group by 15% while the second restriction reduces it by an additional 26%.

A5. Testing for the Presence of Differential Inflation For Treated vs. Control

An important condition for using the evolution of real estate holdings reported by non-residents as a valid counterfactual for how French wealth taxpayers' housing assets would have evolved absent the reform is that

house price fluctuations affect both groups similarly. The absence of differential pre-trends in Figure 3b supports this assumption. However, the post-reform period coincides with a marked increase in house prices in France (see Appendix Figure 9). If properties held by non-residents are located in areas that differ from those in which French wealth taxpayers own real estate, and if post-reform house price inflation varies substantially across these areas, the differences observed after 2017 could reflect differential exposure to inflation rather than genuine portfolio reallocation.

To rule out this concern, I construct separate house price indices for French and non-resident property owners. This complementary analysis relies on a unique dataset on all dwellings in France and their owners. This dataset, assembled by Lei et al. (2025), links property tax records (Fichiers Fonciers)—which identify private homeowners and provide detailed information on their housing portfolios and property locations—with a comprehensive geocoded transactions dataset (DV3F) that enables the valuation of housing wealth.

The market value of each property is estimated each year using a flexible hedonic pricing model with spatial smoothing splines (Wood, 2017). This approach leverages all observed housing transactions to recover a continuous price surface for every property, allowing prices to vary smoothly across space and over time (see Lei et al. (2025) for methodological details).

The resulting dataset forms a comprehensive panel of all property owners in France, providing georeferenced information on their housing wealth annually from 2013 to 2022. A key advantage of the dataset is that it includes the address of owners' primary residence, which allows a precise distinction between French residents and non-residents. Because this dataset cannot be matched to the administrative wealth tax returns used in the main analysis, I proxy wealth-tax-liable property owners as those whose total gross housing wealth exceeds 1 million euros.

For both groups, I then construct house price indices by estimating the average price evolution between 2013 and 2022 of the housing stock owned on January 1, 2016 (pre-reform). This strategy isolates pure price effects and is robust to any portfolio composition changes that may occur in response to the reform. The resulting indices are presented in Figure 8. House price inflation for wealthy French residents and non-residents is strikingly similar throughout the 2013-2022 period, with only a modest divergence in 2022. This parallel evolution confirms that the housing stock held by non-residents provides a valid counterfactual for how French wealth taxpayers' housing assets would have evolved in the absence of the reform.

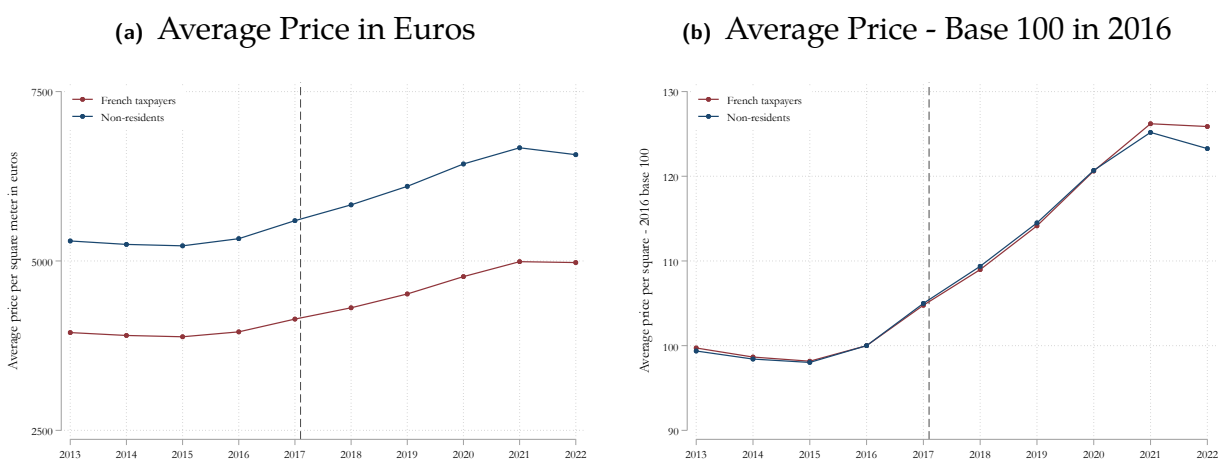


Figure 8: House Price Index for French vs. Non-Residents

Notes: This figure shows the price evolution of the housing stock held by wealthy French residents vs. non-residents as of January 1st, 2016. Wealthy owners are defined as property owners with gross housing wealth exceeding 1 million euros in 2016. The data is constructed from a dataset created by Lei et al. (2025). The figure reveals strikingly similar house price evolution between wealthy French residents and non-residents throughout the 2013-2022 period. The modest divergence in 2022, with somewhat lower inflation for properties held by non-residents, suggests that non-residents provide a conservative estimate of how the housing stock of French residents would have evolved in 2022 in the absence of the reform.

A6. Alternative Control Group

Non-residents differ substantially from French taxpayers across multiple dimensions. Given these large differences, a potential concern is that these two groups may be difficult to compare. To validate the results presented in section 4.4, I estimate the response to the reform using an alternative control group composed of French taxpayers. I construct this alternative control group based on the assumption that taxpayers are unlikely to respond to the 2017 reform by selling their primary residence. Specifically, the new control group consists of initial members of the treated group who own before the reform a primary residence that accounted for more than 70% of their total housing wealth.[55]

I re-estimate the response to the reform using equation (1), comparing this new control group with the original treatment group—reduced by removing taxpayers now reassigned to the control group. Figure 18 presents these results. While the resulting rebalancing estimate across the entire period exceeds the baseline—partly explained by the fact that the most inelastic taxpayers have been removed from the treatment group—the 2018 drop remains very close to the baseline estimate.

[55]This alternative control group is composed of 1,120 taxpayers, while the resulting treated group consists of 14,550 taxpayers.

A7. Revenue Impact of the Reallocation Responses - Further Elements

Infering total taxable real estate and financial wealth before 2018 Two features of the wealth tax data mentioned in section 3 make W^H and W^F not directly observable. First, when real estate is held indirectly, it is reported together with other indirectly held financial assets—under boxes "CE" and "CD" of the wealth tax return. Thus, precise information on indirect ownership of real estate is only accessible after 2017, when financial wealth is no longer taxed. When investigating the reallocation response, I deal with this limitation by focusing on directly held real estate. However, determining the level of indirectly held real estate is necessary to decompose the revenue impact of the wealth tax change. To do this, I base on the period when this piece of information is available, namely between 2018 and 2022. I compute the ratio of indirectly held over total real estate for all wealth taxpayers in 2018 and infer indirect real estate before the reform by assuming that the average ratio has remained constant.[56] Note that the reform did not change taxpayers' incentives to hold their taxable real estate directly or indirectly, making the assumption of constant ratio of indirect real estate reasonable.

Second, from 2011 to 2017, taxpayers with taxable wealth below a certain threshold—set at 2.57 million euro after 2013—had only to file a simplified wealth tax return. In the simplified return, taxpayers only report total net and gross taxable wealth without breaking it down by asset type. In order to estimate W^H and W^F, I circumvent this limitation by exploiting information reported in 2010, before the introduction of the simplified reporting requirements. In particular, I compute for each taxpayer with taxable wealth between 1.3 million euros and 2.57 million euros the ratio of real estate over total taxable wealth in 2010. Then, I impute the amount of taxable real estate for people filing the simplified tax return by multiplying this second ratio by their level of taxable wealth each year. The assumption here is that the average share of real estate in total wealth remains constant between 2010 and 2017.

Based on infered values of real estate, 135,000 wealth taxpayers are estimated to own more than 1.3 million euros in real estate in 2017. This estimate, combined with the 2018 extensive margin response to the reform ($\approx 3.4\%$), predicts well the number of wealth taxpayers in 2018 (132,000), suggesting that W^H and W^F are well approximated.

[56] I replace imputed indirectly held real estate by zero if box "CE" and "CD" are zero for a given taxpayer.

A8. Additional figures and tables

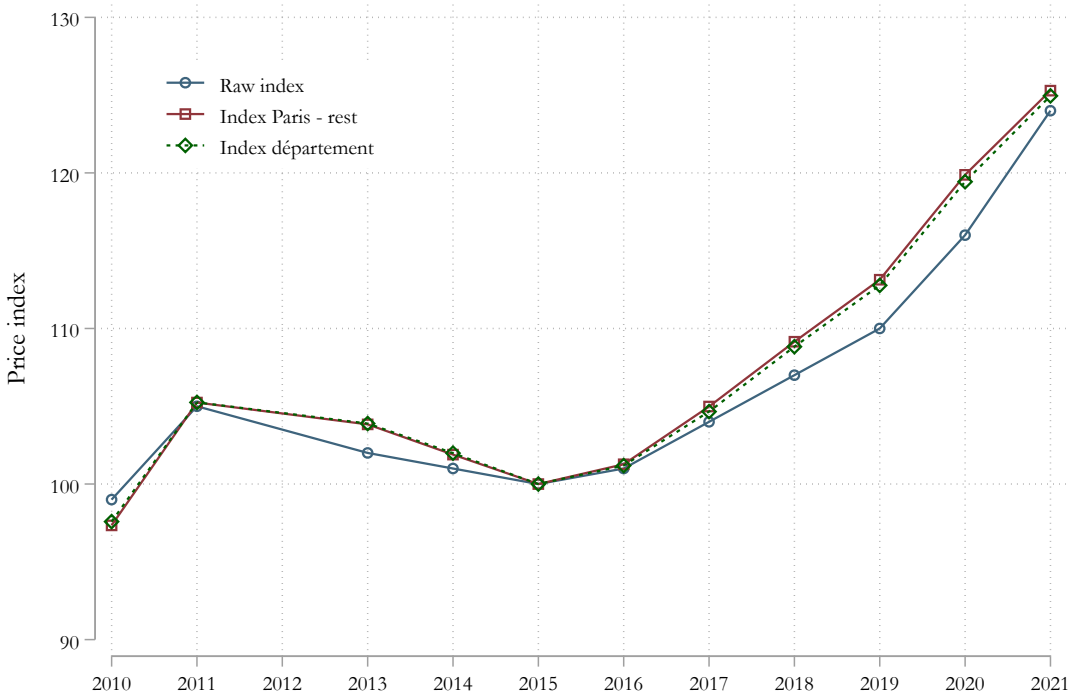


Figure 9: House Price Evolution in France

Notes: This figure displays the evolution of house prices in France over the 2008-2021 period, index 100 in 2015 from the "Indice the prix des logements INSEE". The blue line displays the raw price evolution. The red line shows the price evolution weighted by the relative share of wealth taxpayers in Paris and the rest of France and the price evolution in these two geographic areas. The green line shows the price evolution weighted by the relative share of wealth taxpayers by departement and the price evolution in these two geographic areas.

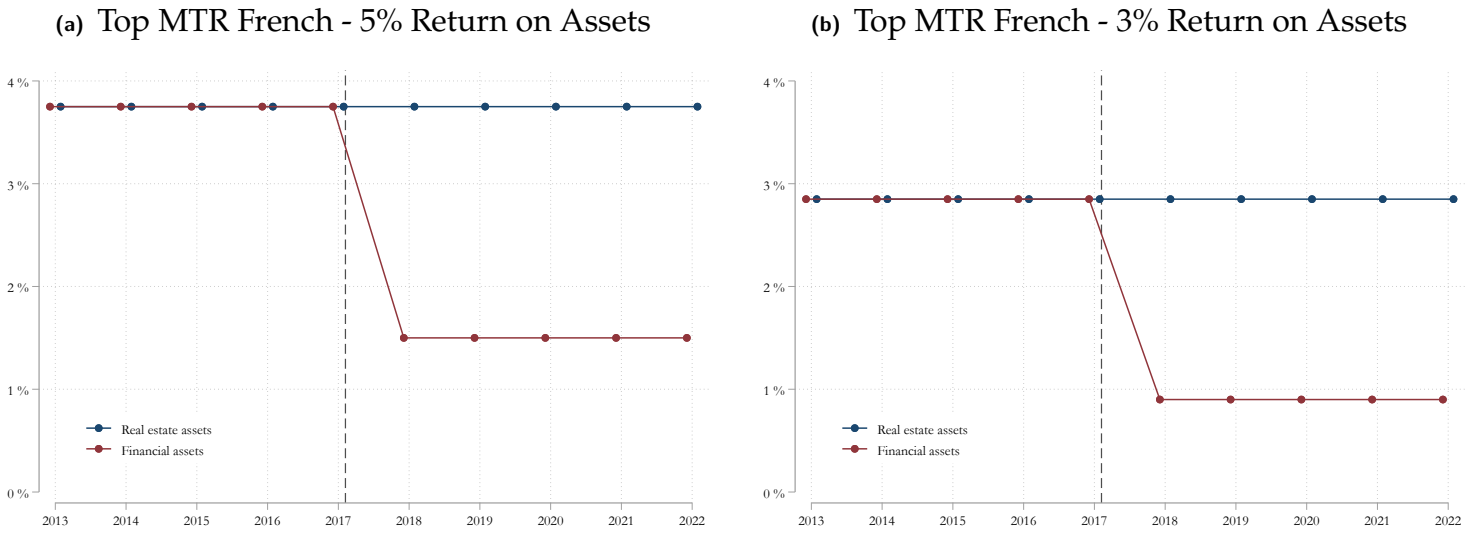


Figure 10: Tax Differential When Accounting for Flat Tax Reform on Financial assets

Notes: This figure extends Figure 1 by incorporating income taxation. Assuming rates of return of 5% and 3%, respectively, the figure traces the evolution of top marginal tax rates by asset class over time. Under either return assumption, the tax differential between real estate and financial assets from 2018 onward ranges between 1.95 and 2.25 percentage points. The introduction of a flat tax on financial capital income in 2018—while rental income remains subject to progressive taxation—makes the preferential tax treatment of financial assets relative to real estate even more pronounced than when wealth taxation alone is considered.

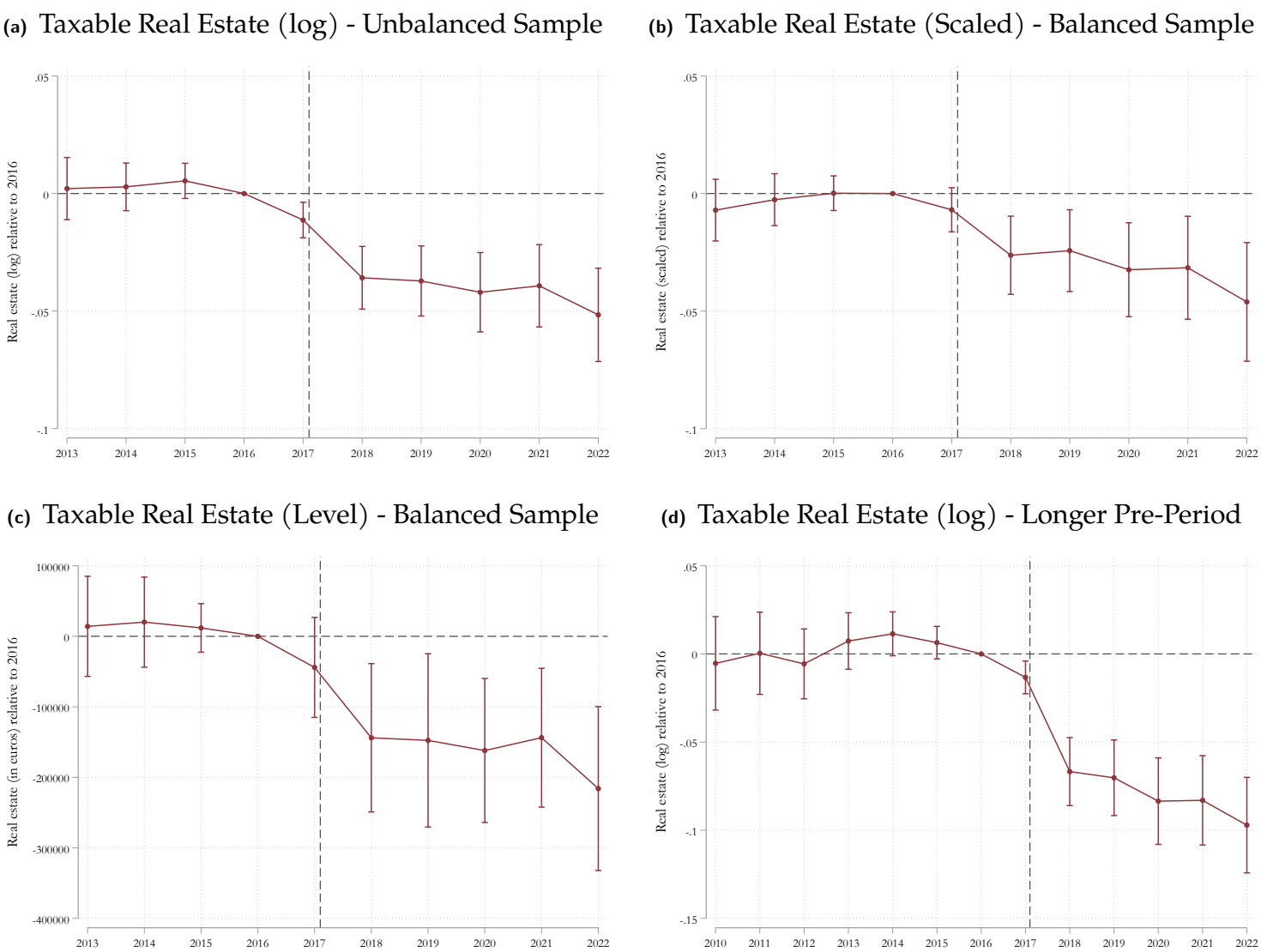


Figure 11: Further Estimates of Portfolio Rebalancing Responses to the 2017 Wealth Tax Reform

Notes: This figure reports the diff-in-diff coefficients from equation (1) using several alternative specifications. Panel a) estimates the response on an unbalanced sample of wealth taxpayers. Panel b) displays the coefficients obtained when using taxable real estate scaled by the 2013–2015 average as the outcome variable (winsorized at the 99th percentile of the non-zero distribution). In Panel c), the outcome variable is taxable real estate in levels. Panel d) presents estimates using an extended sample period starting in 2010 (with a sample size approximately 50% of the baseline sample). In Panel d), information on gross taxable wealth is frequently missing for non-residents in 2011–2012. When this occurs, gross taxable wealth is replaced by net taxable wealth for the entire period for these individuals. This adjustment leads to estimated responses that are close in magnitude to those reported in Figure 12c.

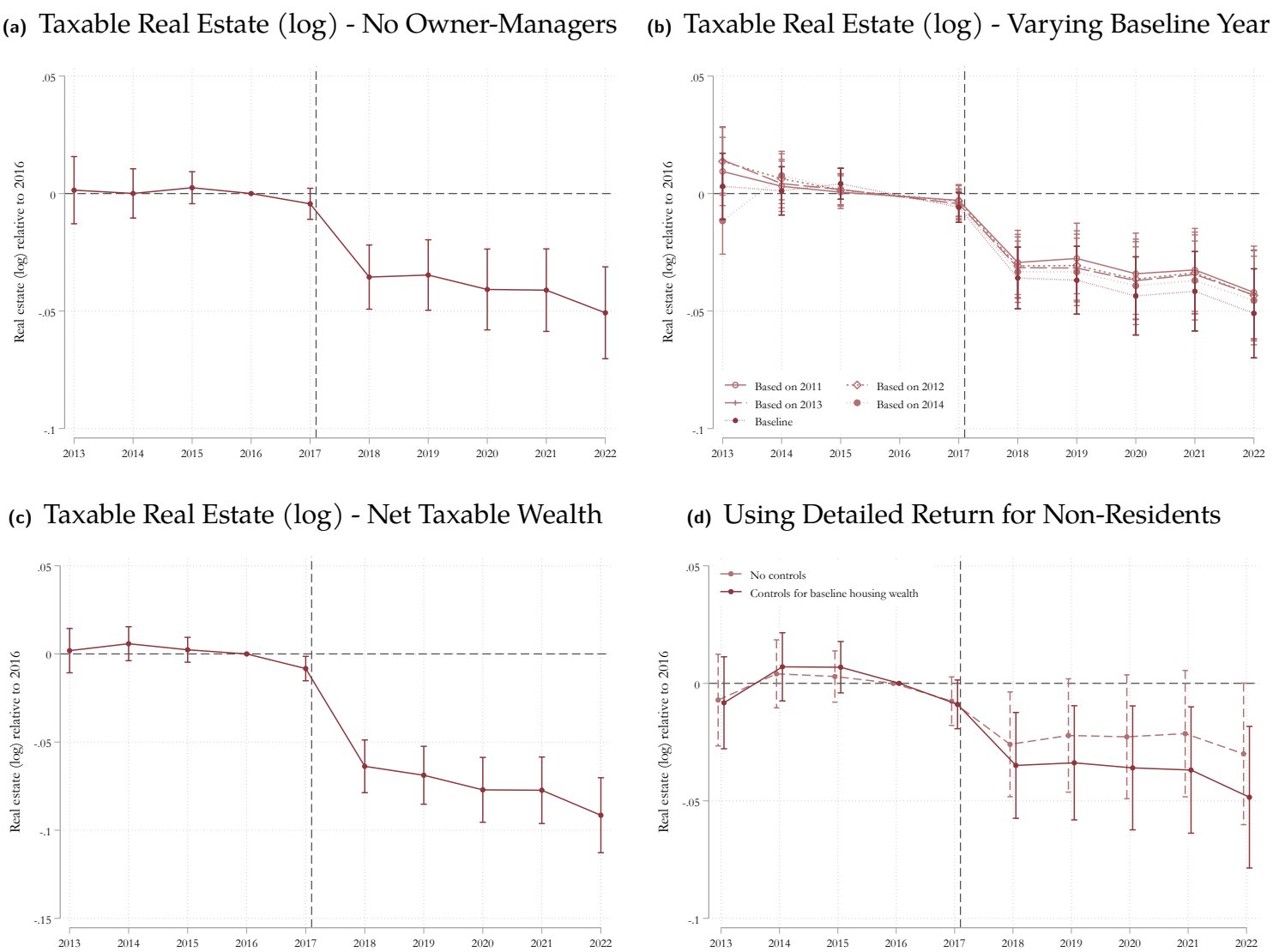


Figure 12: Further Estimates of Portfolio Rebalancing Responses to the 2017 Wealth Tax Reform

Notes: This figure reports the diff-in-diff coefficients from equation (1) using a set of alternative specifications. Panel a) shows the coefficients obtained with the baseline treatment definition as well as with alternative treatment groups based on real estate reported in 2011, 2012, 2013, or 2014. Panel b) presents estimates excluding owner-managers from the treatment group, following the definition used in Bach et al. (2021*b*). In Panel c), taxable real estate for non-residents is defined as net taxable wealth instead of gross taxable wealth. Panel d) displays results obtained when restricting the control group to non-residents who filed a detailed tax return in every year of the sample period (reducing the group to 570 observations) and using directly held real estate as the outcome variable. Appendix A3 provides further details on how I address reporting errors and asset misclassifications when using non-residents' detailed tax returns. Additionally, restricting the control group to non-residents filing detailed returns mechanically results in a group that is substantially wealthier than their French counterparts. Thus, panel d) shows the rebalancing estimate both when controlling for baseline housing wealth (solid line) and without controls (dashed curve).

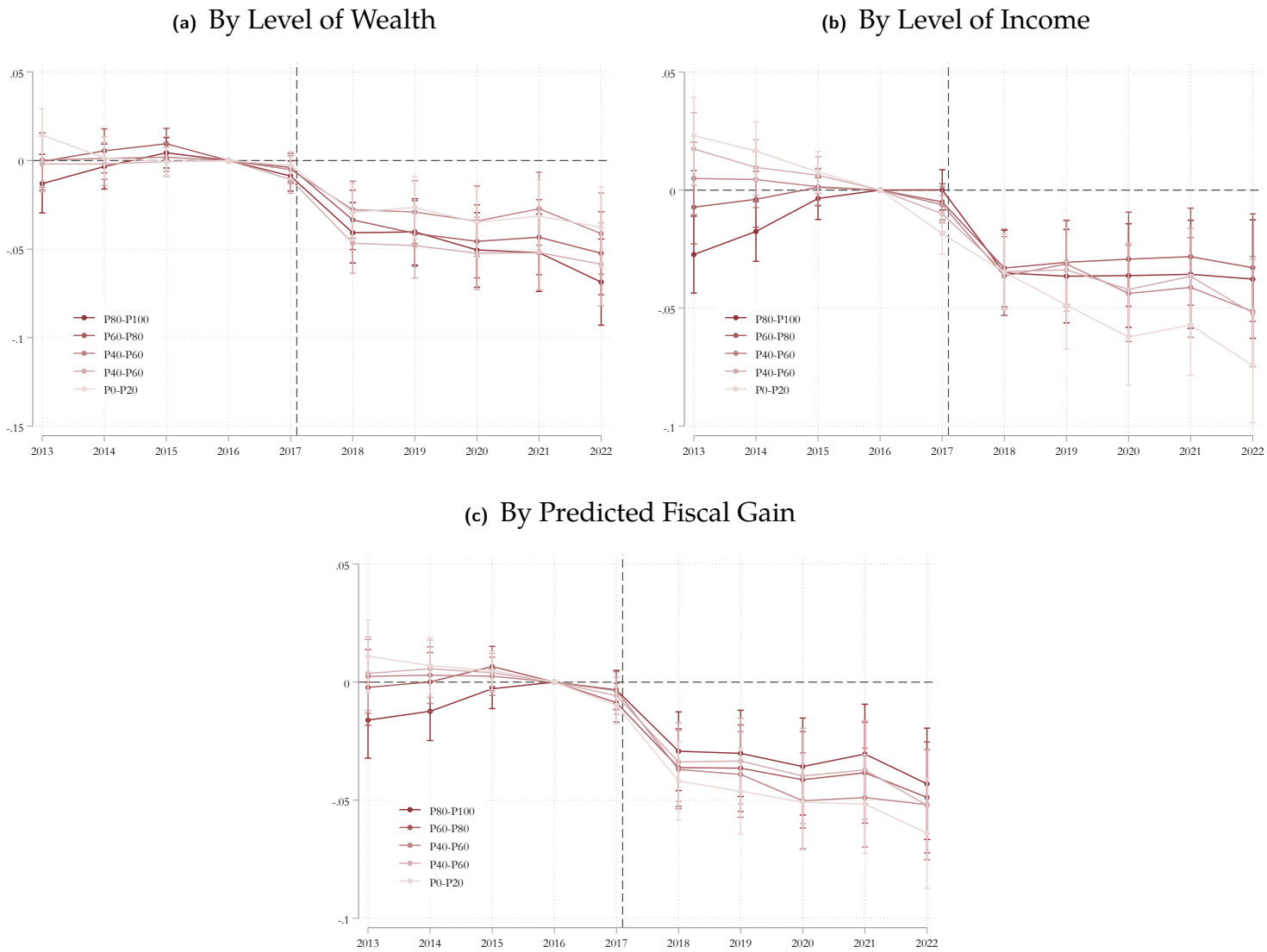


Figure 13: Average Responses to the 2017 Wealth Tax Reform

Notes: This figure shows the heterogeneity in the response to the 2017 policy change when ranking treated taxpayers by quintiles of various pre-reform distributions (2013-2015 average). More specifically, taxpayers are ranked by level of pre-reform taxable wealth (panel a), taxable income (panel b), predicted fiscal gains from the reform (scaled by baseline wealth tax liabilities) (panel c). Predicted fiscal gains are very correlated with baseline portfolio allocation, which itself affects the magnitude of the response. Thus, quintiles of predicted fiscal gains are defined within percentiles of baseline housing wealth. Each regression estimates equation (1) using the full control group of non-residents.

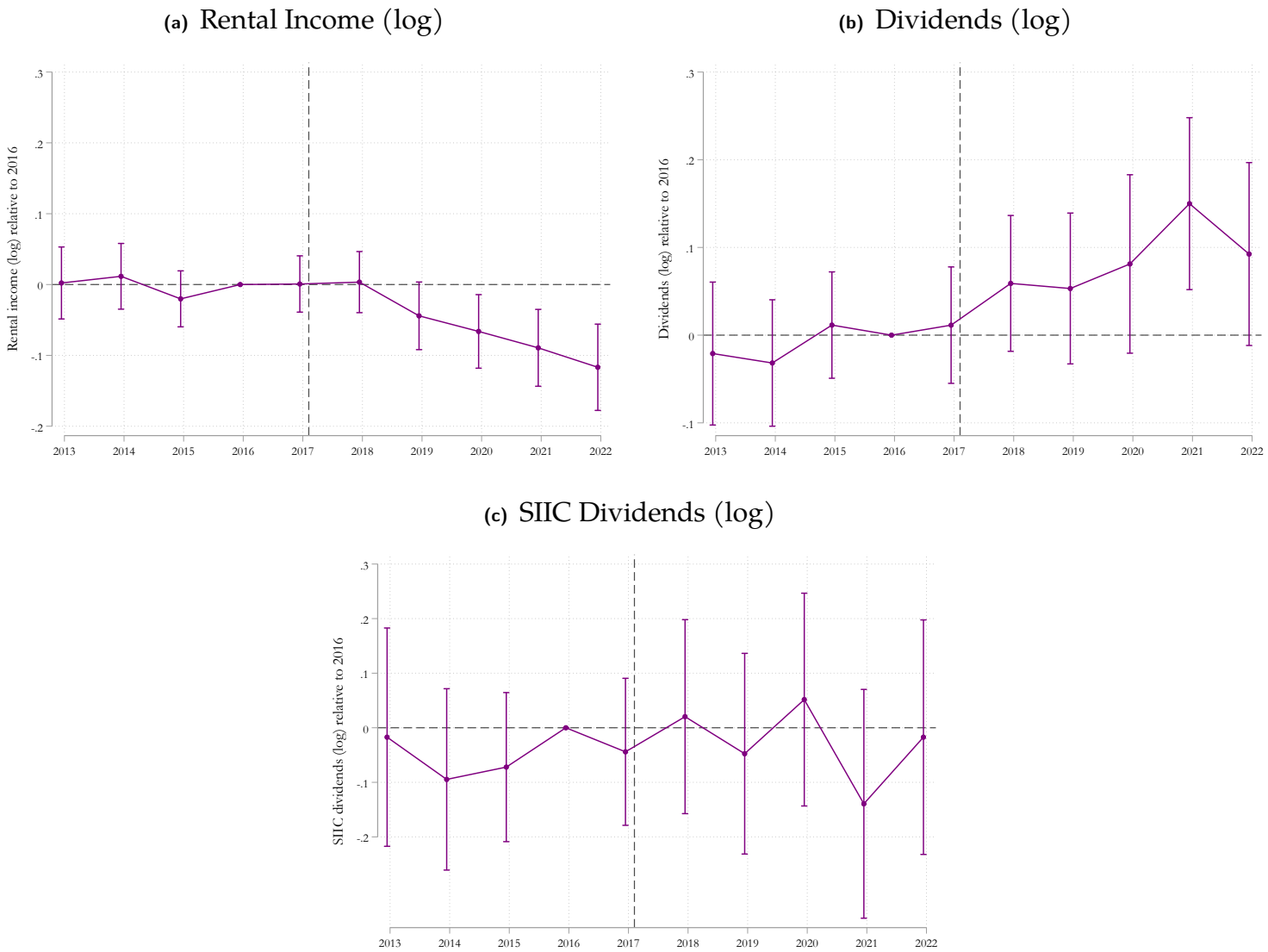


Figure 14: Capital Income Responses to the 2017 Wealth Tax Reform

Notes: This figure shows the evolution of various types of capital income received by taxpayers from the treatment group relative to a control group of French taxpayers who own less than 1.3 million euros—the exemption threshold—in real estate before the reform. Panel a) shows the evolution of (log) rental income, panel b) displays (log) dividends, panel c) shows dividends paid out pay SIIC companies. Specification for panels a) and c) include controls for baseline level of non-primary housing interacted with year dummies. Specification for panel b) includes controls for for baseline equity wealth and baseline financial income interacted with year dummies. All specifications control for taxpayer's age. Results for the specification in euros are shown in figure 5.

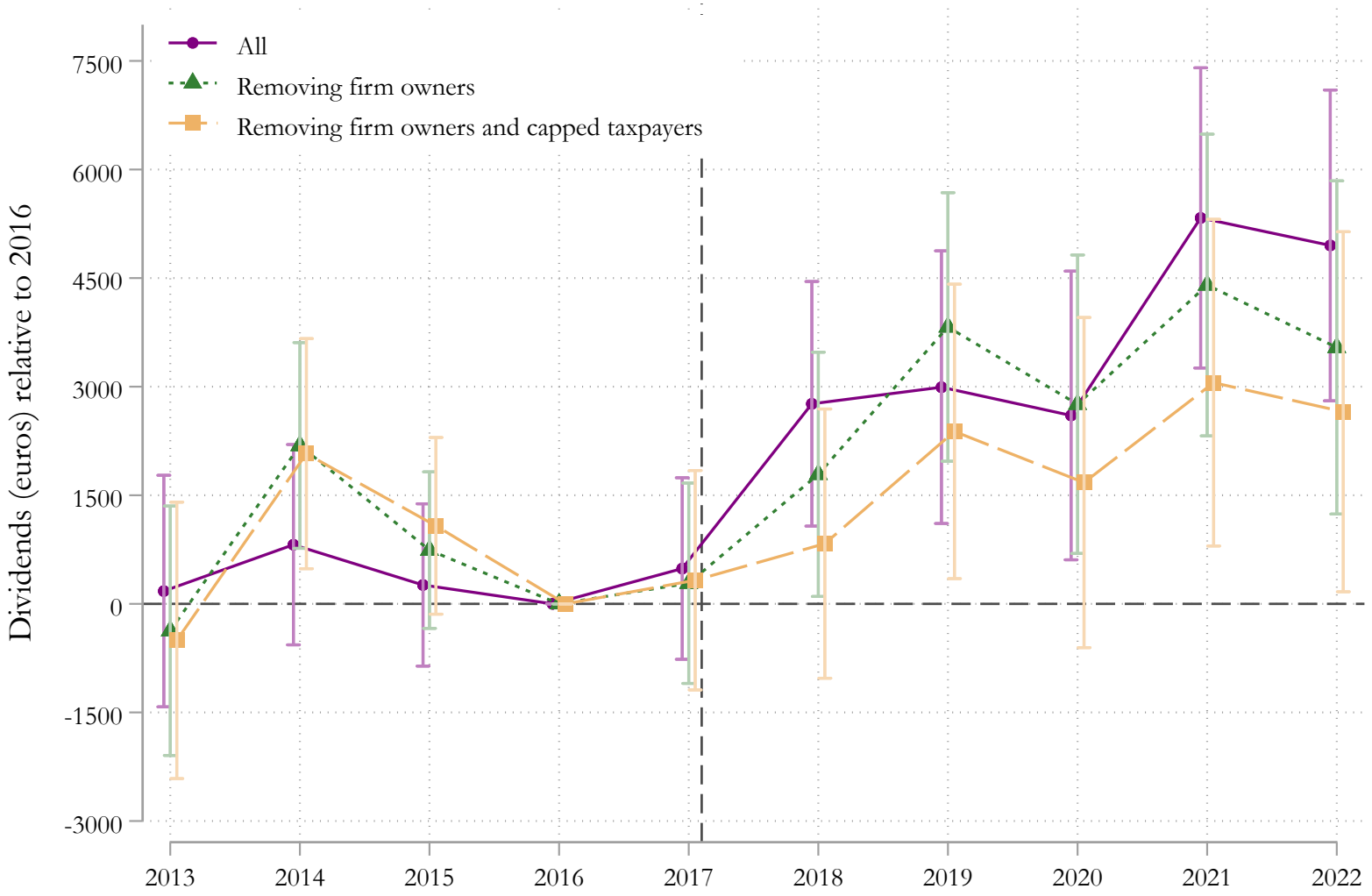


Figure 15: Dividend Response to the 2017 Wealth Tax Reform - Various Sample Restrictions

Notes: This figure shows the evolution of dividend income (in euros) received by taxpayers from the treatment group relative to a control group of French taxpayers who own less than 1.3 million euros—the exemption threshold—in real estate before the reform. It shows how various sample restrictions affect the estimated response.

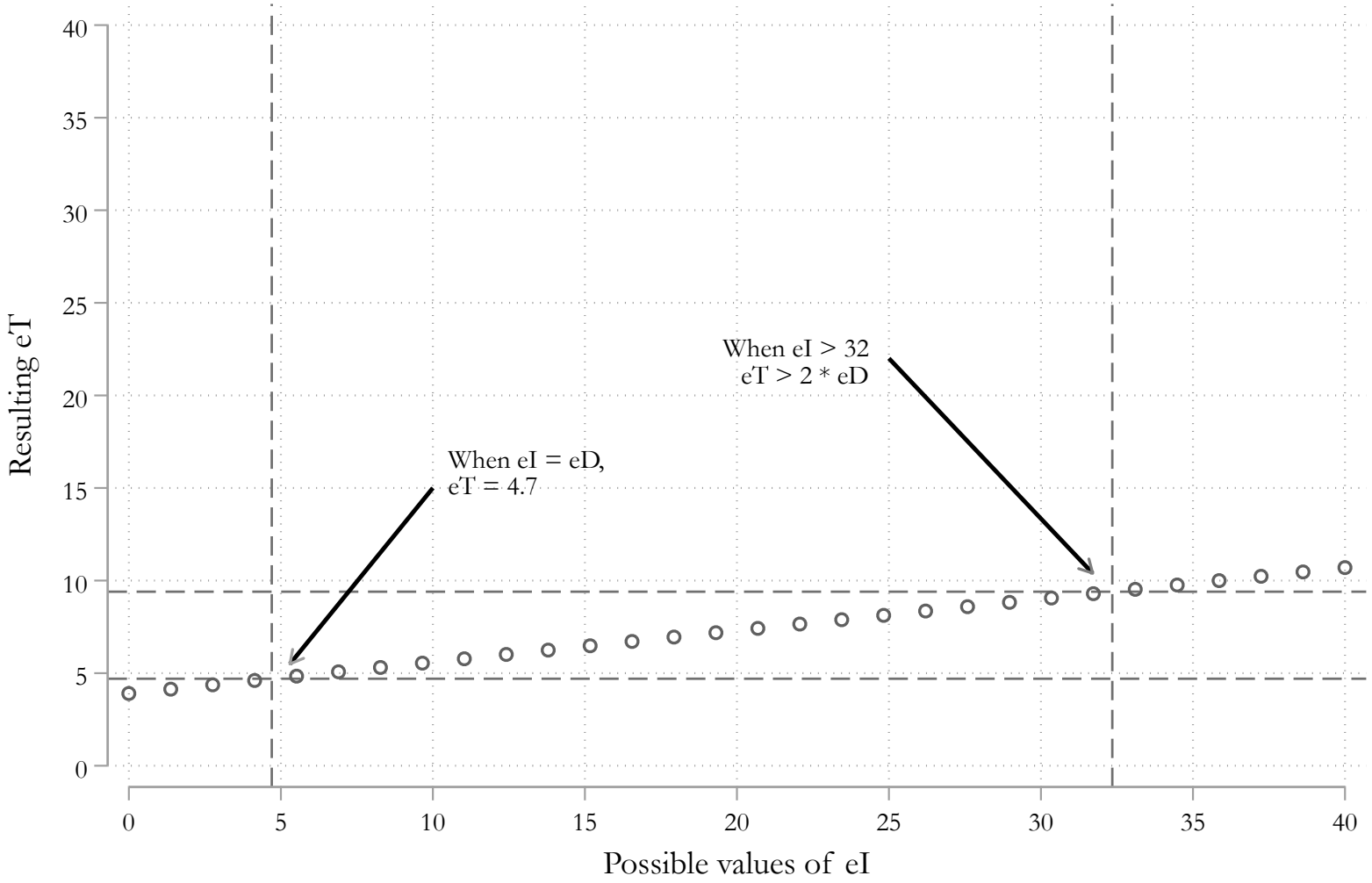


Figure 16: Size of the Total Cross-Elasticity For Various Values of Indirectly Held Housing Cross-Elasticity

Notes: This figure illustrates how large the cross-elasticity of indirectly held housing wealth would need to be in order to materially affect the total cross-elasticity of housing (direct + indirect). Let eD denote the cross-elasticity for directly held real estate (estimated in this paper), eI the cross-elasticity for indirectly held real estate, and eT the total cross-elasticity. As shown in the figure, if the direct and indirect cross-elasticities are equal to 4.7, the baseline estimate, then eT mechanically equals 4.7 and the bias is zero. The figure further shows that for eT to be twice as large as the estimated cross-elasticity for directly held real estate, the elasticity for indirectly held real estate would have to exceed 32. In other words, eI would need to be more than six times larger than eD to generate a total cross-elasticity of around 10 — a value that would still fall below many of the cross-elasticity estimates found across different financial assets in the context of wealth tax differentials (see Table 3).

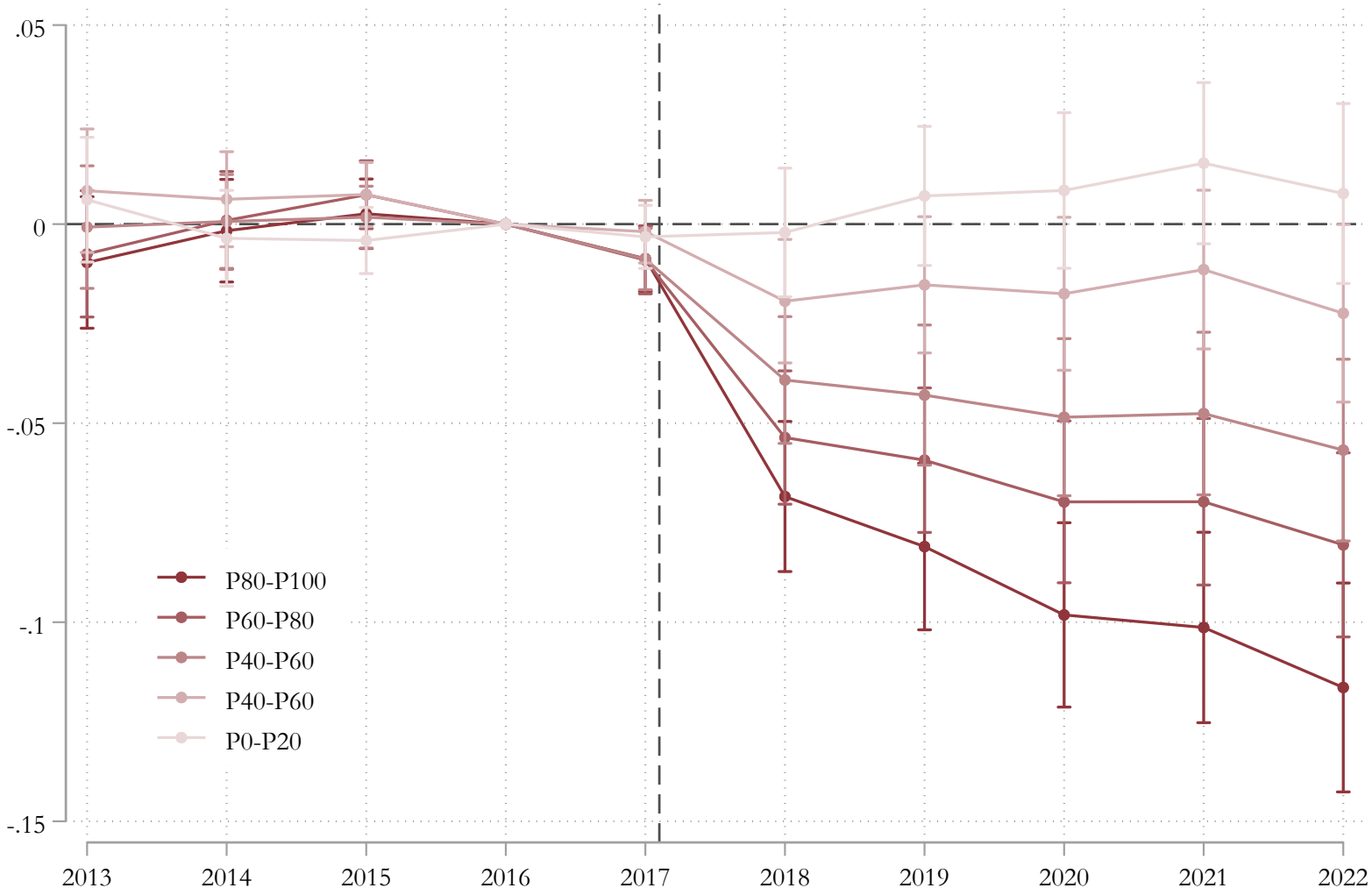


Figure 17: Response by Share by Non-Primary Housing Wealth

Notes: This figure shows the heterogeneity in the response to the 2017 reform by quintiles of pre-reform non-primary home share between 2013 and 2015. Non-primary home share is defined as the average share of total housing wealth that is not primary housing between 2013 and 2015. The figure displays coefficients obtained from the estimation of equation (1) using the full control group. Taxpayers located at the top of the distribution (p80-p100) are likely to hold a high share of their housing assets in the form of investment properties.

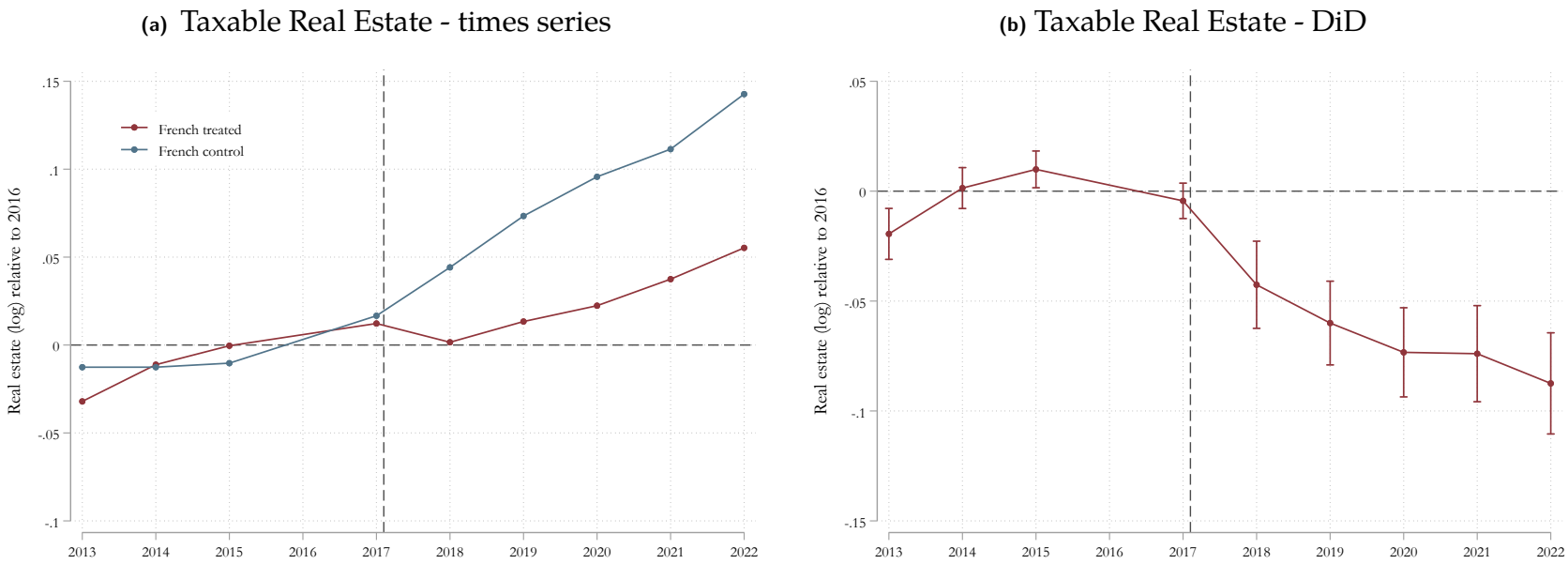


Figure 18: Response to the 2017 Wealth Tax Reform - Alternative Control Group

Notes: This figure shows the diff-in-diff coefficients obtained from the estimation of equation (1) on a balanced sample of wealth taxpayers using an alternative definition of the control group. This new control group consists of 2,168 French taxpayers who i) are liable to the wealth tax all years in 2013, 2014 and 2015, ii) file a detailed return at least once over this period and iii) when they file a detailed return, report at least 1.3 million euros in directly held taxable real estate net of debts and iv) whose primary home accounts for more than 70% of the value of their total housing wealth. The treatment groups is defined as the original treatment group reduced from taxpayers that are now in the new control group (14,550 taxpayers). Panel a) shows the times series while panel b) displays the DiD coefficients.