

CENTRALISED VS. DECENTRALISED WEALTH TAXATION: EVIDENCE FROM THE SPANISH TAX ON LARGE FORTUNES

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Centralised vs. Decentralised Wealth Taxation: Evidence from the Spanish Tax on Large Fortunes^{*}

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Abstract

This paper studies partial wealth-tax harmonisation in Spain through a national wealth tax designed to reduce tax competition under decentralised taxation. The reform establishes a minimum effective tax level for high-wealth taxpayers while leaving the existing wealth tax under regional control. We exploit opposing changes in tax liability: high-wealth taxpayers in Madrid became subject to the national tax, while Andalusia eliminated the regional tax for taxpayers below the national threshold. The reform substantially increased revenue, mostly from high-wealth taxpayers in Madrid. Mobility patterns are consistent with a weakening of Madrid's previous tax advantage, although additional post-reform years are needed to assess their persistence. The clearest responses occur within taxpayers' declarations: Madrid taxpayers shifted reported wealth towards exempt business assets, while Andalusian taxpayers reported more assets and fewer deductible debts once their liability was removed. If business assets were fully taxable, combined wealth-tax revenue could more than double.

Keywords: wealth taxation; tax harmonisation; tax avoidance; fiscal federalism

JEL Classification: H24, H26, H71, H73, H77, D31

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1 Introduction

Wealth taxes have returned to the policy debate as governments seek to address rising wealth concentration, growing fiscal pressures, and the difficulty of taxing the ultra-wealthy when a substantial share of their economic income takes the form of retained earnings and unrealised capital gains (Alvaredo et al., 2018; Scheuer and Slemrod, 2021; Chancel et al., 2022; Saez and Zucman, 2022; Zucman, 2024). The effectiveness of wealth taxation, however, depends not only on tax rates, exemptions, and enforcement, but also on coordination across jurisdictions, a question that has gained increasing attention in recent debates over decentralised wealth taxation (e.g., Boll et al., 2026, for California). When regional governments can set different tax schedules or rebates, tax competition may erode the tax base and weaken the revenue and redistributive objectives of the tax through tax-avoidance responses such as taxpayer mobility across jurisdictions (Brühlhart et al., 2022; Agrawal et al., 2025). Central governments can address these distortions through tax-base harmonisation, minimum tax rates, or greater integration of tax administration and enforcement. This paper exploits the introduction of a centralised wealth tax in Spain that effectively imposed a minimum level of wealth taxation on high-wealth taxpayers while regional governments retained substantial autonomy. This institutional setting allows us to study the effects of partial tax harmonisation.

The Spanish Wealth Tax (*Impuesto sobre el Patrimonio*, IP) is an annual tax on individual net wealth whose regulatory powers are largely assigned to regional governments. Following its reintroduction in 2011, regional policies increasingly diverged as some regions modified allowances, rates, deductions, and rebates. Madrid represented the most prominent case, maintaining a 100 percent rebate that resulted in a zero effective wealth-tax rate. This tax differential attracted high-wealth taxpayers from other Spanish regions and generated fiscal externalities extending beyond wealth-tax revenue itself (Agrawal et al., 2025). In 2022, Andalusia also introduced a 100 percent rebate, effectively eliminating its regional wealth tax.

In December 2022, the central government responded by introducing the Temporary Solidarity Tax on Large Fortunes (*Impuesto Temporal de Solidaridad de las Grandes Fortunas*, ITSGF). This wealth tax was intended both to raise additional revenue and to reduce

regional disparities in effective wealth taxation arising from decentralised tax setting. The ITSGF is a centralised tax that builds on the tax base and main design features of the existing IP. Taxpayers may deduct the IP liability paid to their autonomous community from their ITSGF liability. Consequently, the new tax has little or no effect in regions already applying sufficiently high wealth-tax liabilities, but it generates central-government liability when regional rebates reduce or eliminate the IP.

The ITSGF provides an empirical setting in which tax liabilities changed differently across regions and wealth groups. In Madrid, individuals subject to the ITSGF moved from a zero effective wealth-tax rate to a positive central tax. In Andalusia, the introduction of the 100 percent regional rebate eliminated wealth-tax liability for taxpayers below the ITSGF threshold, while individuals above it remained taxed, through the ITSGF or, from 2023 and at the taxpayer's option, through the regional IP. We exploit these changes to address three main questions. First, did the introduction of the ITSGF increase wealth-tax revenue? Second, did partial harmonisation alter the geographical distribution of high-wealth taxpayers? Third, did taxpayers respond through other margins, particularly by adjusting reported taxable wealth, exempt assets, or debt?

The third question is central to evaluating the effectiveness of wealth-tax coordination. Equalising effective tax liabilities across regions does not necessarily eliminate behavioural responses. When wealth-tax-induced mobility becomes less advantageous, taxpayers may instead reorganise their portfolios, shift wealth towards exempt assets, modify the debts reported on their tax returns, or change the information provided to the tax authority. Existing studies show that the response of taxable wealth may reflect a combination of real wealth accumulation, mobility, legal avoidance, and misreporting (Jakobsen et al., 2020; Brühlhart et al., 2022; Londoño-Vélez and Ávila-Mahecha, 2025). In Spain, using data for Catalonia, Mas-Montserrat et al. (2025) find that wealth taxpayers respond to higher liabilities by exploiting exemptions, particularly those related to business assets, and by adjusting their asset and income composition to benefit from the tax-liability ceiling. More broadly, the magnitude and nature of behavioural responses depend critically on exemptions, reporting requirements, and the information available to the tax authority (Garbinti et al., 2026).

We answer these questions using the Spanish Household Panel (*Panel de Hogares*, PH), a large administrative sample containing longitudinal information on household income, reported wealth, and the composition of assets and liabilities. We construct a panel of wealth-tax filers covering the period from 2016 to 2023, which allows us to observe the first two tax years affected by the ITSGF. Our empirical analysis consists of three parts. First, we document the evolution of combined IP and ITSGF revenue and of the effective average tax rate on reported taxable wealth. Second, we aggregate individual records into region-year-wealth cells and estimate difference-in-differences models tracking the share of each wealth group residing in a given region. Following the empirical approach of Agrawal et al. (2025), we compare taxpayers above the effective ITSGF threshold with a nearby group holding between €3.2 million and €3.7 million, before and after 2021.

Third, we estimate individual-level difference-in-differences models for reported net taxable wealth and its main components. For Madrid, we compare individuals with wealth above €3.7 million, who became subject to the new central tax, with individuals in the same wealth range in five autonomous communities whose wealth-tax policies did not change after 2021: Aragon, Canary Islands, Castile-La Mancha, Castile and Leon, and La Rioja. For Andalusia, we study taxpayers with wealth below €3.7 million, whose regional wealth-tax liability was eliminated by the new rebate, and compare their evolution with that of taxpayers in the same wealth range in the five control regions. In both cases, 2021 is the pre-reform reference year.

Our first result is that the introduction of the centralised wealth tax led to a substantial and immediate increase in overall wealth-tax revenue. Combined IP and ITSGF revenue rose from approximately €1.3 billion in 2021 to more than €1.9 billion in 2023. The change was particularly pronounced in Madrid, where wealth-tax revenue increased from virtually zero in 2021 to approximately €500 million in 2023. At the individual level, the combined IP–ITSGF average tax rate remained broadly stable at around 0.29–0.31 percent of taxable wealth between 2016 and 2021, before increasing to approximately 0.39 percent in 2022 and remaining at a similar level in 2023.

The mobility patterns are consistent with the ITSGF weakening Madrid’s previous tax advantage, although the evidence remains limited by the short post-reform period. From

2016 onward, Madrid exhibited a sustained increase in its share of high-wealth filers, consistent with the mobility patterns documented by Agrawal et al. (2025). The first decline in Madrid’s share of wealth-tax filers with net taxable wealth above €3.7 million occurred in 2023, the first full year following the introduction of the ITSGF. By contrast, among filers with net taxable wealth below the €3.7 million threshold, who were not directly subject to the ITSGF, Madrid’s share increased in 2023. Nevertheless, the difference between the two groups is not statistically significant and therefore does not constitute conclusive evidence of a differential mobility response to the reform.

A further possible response to the reform is a stabilisation of mobility flows among wealth-tax filers with net taxable wealth above €3.7 million. By largely neutralising Madrid’s previous tax advantage for this group, the ITSGF removed much of the wealth-tax incentive to locate in Madrid rather than elsewhere. A stabilisation of inflows and outflows would therefore be consistent with the reform, although a longer post-reform period is needed to assess whether this pattern persists. A longer post-reform period is also needed to determine whether taxpayers below the ITSGF threshold, who remain subject to regional wealth taxation outside Madrid while benefiting from Madrid’s rebate, continue to exhibit net migration towards the region.

Our third set of results examines an alternative margin of response to the ITSGF. To the extent that partial harmonisation reduces the scope for wealth-tax avoidance through mobility, taxpayers may instead adjust along other margins, including changes in the level and composition of reported wealth. Relative to 2021, taxpayers affected by the ITSGF in Madrid reported approximately 5 percent less net taxable wealth in 2022 and 6 percent less in 2023 than comparable taxpayers in the control regions. Despite the limited time available to adjust in 2022, taxpayers may have been able to shift or reclassify assets relatively quickly, particularly towards categories receiving preferential tax treatment, such as exempt business assets. Consistent with this interpretation, the share of treated Madrid taxpayers reporting any exempt assets rises by five percentage points after the reform, while it declines in the control regions. This pattern is consistent with evidence from Catalonia showing that preferential tax treatment of business assets creates an important margin for tax avoidance, both in wealth and inheritance taxation (Mas-Montserrat et al., 2025; Micó-Millán, 2024).

In Andalusia, the response appears to operate through different reporting margins. Following the elimination of the regional wealth tax for taxpayers with net taxable wealth below €3.7 million, reported net taxable wealth increased by approximately 7 percent between 2021 and 2023 compared with the change observed in the control regions. Treated taxpayers report both more non-exempt assets and an approximately 58 percent larger decline in deductible debt than taxpayers in the control regions. The magnitude and immediacy of this change make it unlikely to reflect actual deleveraging alone, and instead suggest that taxpayers may have less incentive to report deductible liabilities once doing so no longer reduces their tax liability. Because deductible debts must be properly documented and linked to the corresponding assets, reporting them may entail non-negligible compliance costs. These findings suggest that wealth taxation affects not only taxpayers' underlying economic choices but also their incentives to report specific components of the tax base.

From a policy perspective, our provisional results suggest that the ITSGF has partially achieved its objectives by increasing public revenues and weakening the tax advantage previously enjoyed by Madrid, the region with a 100 percent rebate on the regional wealth tax. At the same time, our findings highlight two important limitations of the current design. The first concerns the treatment of exempt assets, particularly business assets. As mobility-based avoidance becomes less attractive, taxpayers may increasingly respond by shifting wealth towards exempt categories. Our estimates suggest that behavioural responses in Madrid reduced revenues by approximately €73 million during the first two years of the reform. One possible policy response would therefore be to restrict or eliminate the exemption for business assets. Our calculations indicate that, in the absence of this exemption, the ITSGF and the regional wealth tax (IP) would jointly raise close to €5 billion.

A second limitation is that the ITSGF does not eliminate regional tax differences for individuals with net taxable wealth between €700,000 and €3.7 million. Taxpayers in this range remain outside the scope of the centralised wealth tax, allowing regional wealth-tax rebates to continue generating differences in effective taxation across regions. This design entails revenue losses in regions such as Madrid and Andalusia and preserves incentives for other regions to introduce similar rebates, as illustrated by Cantabria's adoption of a full rebate in 2024.

This paper makes three main contributions. First, it contributes to the literature on tax coordination (Kanbur and Keen, 1993; Devereux and Pearson, 1995; Agrawal, 2023; Hebous and Keen, 2023; Agrawal et al., 2025) by studying the introduction of a centralised wealth tax that partially harmonises regional wealth taxation while preserving substantial regional autonomy. Much of the existing literature studies tax harmonisation, minimum taxes, and other forms of tax cooperation through theoretical models or counterfactual exercises, while empirical evidence from implemented coordination reforms remains limited. The ITSGF establishes a common effective tax floor for high-wealth taxpayers while allowing regions to maintain different tax schedules and rebates. This setting allows us to examine how partial tax harmonisation operates in practice and how it affects tax revenues, taxpayer behaviour, and decentralised tax-setting.

Second, the paper contributes to the literature on wealth taxation and taxpayer mobility across subnational jurisdictions (Conway and Rork, 2006; Moretti and Wilson, 2023; Brülhart et al., 2022; Agrawal et al., 2025). Our setting is closely related to that of Agrawal et al. (2025), who document the mobility and fiscal externalities generated by Spain’s decentralised wealth-tax system and simulate the revenue consequences of alternative coordination mechanisms. We study the policy intervention that followed this period of decentralised tax competition. Rather than exploiting tax differentials across jurisdictions, we examine what happens to taxpayer mobility when the central government constrains those differentials through a national wealth tax. This allows us to examine whether reducing the tax advantage of a low-tax jurisdiction weakens mobility responses and whether taxpayers below the national threshold, who remain exposed to regional tax differentials, continue to respond to those incentives.

Third, we contribute to the literature on behavioural responses to wealth taxation (Zoutman, 2018; Jakobsen et al., 2020; Brülhart et al., 2022; Ring, 2025; Londoño-Vélez and Ávila-Mahecha, 2025; Mas-Montserrat et al., 2025). Existing evidence shows that taxable wealth can respond through several margins, including saving, portfolio reallocation, debt, and different forms of avoidance and evasion. We contribute to this literature by studying responses to both an increase in effective wealth taxation and the removal of a regional wealth tax within the same institutional and administrative setting, and by distinguishing

changes in underlying wealth from changes in reporting and asset classification. In Madrid, we find that affected taxpayers reduce reported taxable wealth while increasing exempt assets, highlighting the role of exemptions as an avoidance margin. In Andalusia, by contrast, the removal of the wealth tax substantially reduces reported debt, pointing to a reporting response associated with the compliance and documentation requirements generated by the tax. Our findings show that responses in taxable wealth depend not only on statutory tax rates, but also on exemptions, reporting requirements, and the information available to tax authorities to verify self-reported tax bases (Garbinti et al., 2026).

2 Institutional background

Spain combines two taxes on net wealth: the long-standing Wealth Tax (IP) and the Tax on Large Fortunes (ITSGF), introduced in 2022. The two taxes are broadly similar in scope and design but differ in one key institutional feature: the degree of decentralisation.¹

The IP was introduced in 1977 during Spain’s transition to democracy, initially conceived as a temporary instrument to facilitate monitoring of the newly created personal income tax, and was made permanent in 1991 (Durán-Cabré and Esteller-Moré, 2014). The tax was suspended at the onset of the Great Recession in 2008 and reinstated in 2011 under a formally temporary status, extended in successive years until it was made permanent again in 2021. The IP is a state tax ceded to the regions, which have substantial regulatory autonomy over key tax parameters, including the tax-free allowance, tax rates, and deductions and credits. In the absence of regional legislation, the national rules apply by default. Regional differences became more pronounced following the reintroduction of the tax in 2011, with Madrid representing the most notable case through a 100 percent general tax credit that effectively eliminated Wealth Tax liabilities.

The IP applies to individuals whose taxable net wealth exceeds a general exemption of €700,000. In addition, up to €300,000 of the value of the primary residence is exempt

¹The Basque Country and Navarre are the only two regions that do not apply the common-regime IP or the ITSGF as described here, since they lie outside the Common Fiscal Regime (*Régimen Fiscal Común*) and exercise their own tax powers under the *Concierto* and *Convenio Económico*, respectively. During our sample period, neither region substantially relaxed its wealth taxation or introduced a broad-based rebate comparable to Madrid’s, which limits concerns that their tax treatment drew high-wealth individuals away from the regions we study.

from the tax base. Above this threshold, the IP is progressive, with statutory marginal rates ranging from 0.2% to 3.5% across successive brackets of net taxable wealth. The tax base covers the full range of assets held by the taxpayer, including real estate, financial and business assets, and other property, net of liabilities. A joint IRPF and IP liability ceiling limits the combined burden of both taxes to 60% of the taxpayer's aggregate personal income tax base, with a minimum payment set at 20% of the IP liability.

The IP also provides a number of asset-specific exemptions. These include certain historical and artistic assets, household goods (excluding jewellery, furs, and vehicles), pension rights, and intellectual property held by its original author, among others (Article 4 of Ley 19/1991). The exemption for business assets is by far the most consequential of these: it covers sole proprietorships and, especially for portfolio behaviour, shareholdings in family businesses. For shareholdings, exemption requires a minimum stake of 5% held individually, or 20% jointly with spouse, ascendants, descendants, or siblings, together with an effective management role remunerated above 50% of the taxpayer's total employment and business income, and only applies to the share of company assets genuinely affected to economic activity. These provisions create scope for taxpayers to reorganise their portfolios towards exempt business assets, a margin of adjustment that we examine directly in the empirical analysis.

The ITSGF, in turn, was announced by the central government in September 2022 and first applied to the 2022 tax year. A central motivation was to reduce the tax advantage enjoyed by high-net-worth individuals residing in regions that had partially or fully offset the IP through regional tax credits. The tax was initially designed to remain in force for only two years, creating uncertainty about its continuation beyond that period. In December 2023, however, its application was extended indefinitely, pending a broader review of wealth taxation as part of the reform of the regional financing system.

The ITSGF largely builds on the existing structure of the IP. Both taxes apply to individuals' net wealth and share the same rules regarding taxpayers, asset valuation, exemptions, the determination of the tax base, deductible liabilities, and the annual assessment of wealth as of December 31 (Martínez et al., 2022). The exemptions available under the IP, including the exemption of up to €300,000 for the primary residence, therefore also apply to the

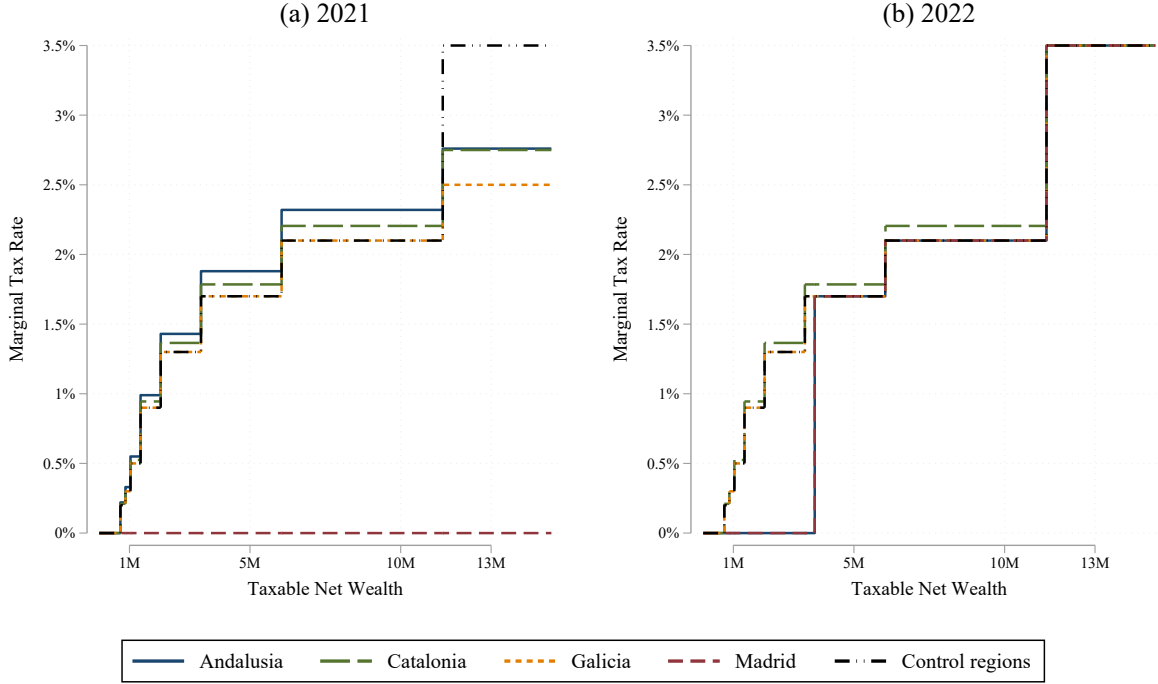
ITSGF. Both taxes are also subject to a joint income-and-wealth tax ceiling intended to limit the combined burden relative to taxable income.

The main differences concern the degree of decentralisation and the range of wealth subject to taxation. Unlike the IP, the ITSGF cannot be ceded to the regions and remains under central government control. It also applies only at the top of the distribution: resident taxpayers benefit from the same €700,000 tax-free allowance as in the IP, and the first €3 million of the resulting base is taxed at a zero rate, so a positive liability arises only above €3.7 million of taxable net wealth. Above this threshold, marginal rates rise from 1.7 to 2.1 and 3.5 percent.

The interaction between the two taxes is central to the operation of the ITSGF. Any IP liability effectively paid is fully deductible from the ITSGF liability, thereby avoiding double taxation. The ITSGF therefore operates as a top-up tax rather than as an additional tax levied on top of the IP: an additional liability arises only when the amount effectively paid under the regional IP is below the liability implied by the ITSGF. In this way, the tax establishes a state-level floor on wealth taxation for individuals subject to it and limits the extent to which regional tax credits can reduce or eliminate the tax burden at the top of the wealth distribution.

Figure 1 illustrates how this mechanism changes regional differences in wealth taxation. Panel (a) reports marginal tax schedules in 2021, the last year before the introduction of the ITSGF. At that time, effective tax burdens differed substantially across regions: Andalusia, Catalonia, and Galicia maintained positive marginal rates throughout, while Madrid applied a zero effective rate through its 100% tax credit. Panel (b) shows the combined operation of the IP and the ITSGF in 2022. At the top of the wealth distribution, the ITSGF substantially reduces regional heterogeneity by introducing a common state-level tax floor. Below the range in which the ITSGF generates a positive liability, however, regional differences remain.

Figure 1 : Marginal tax rates of wealth taxation in Spanish regions (2021 vs 2022)



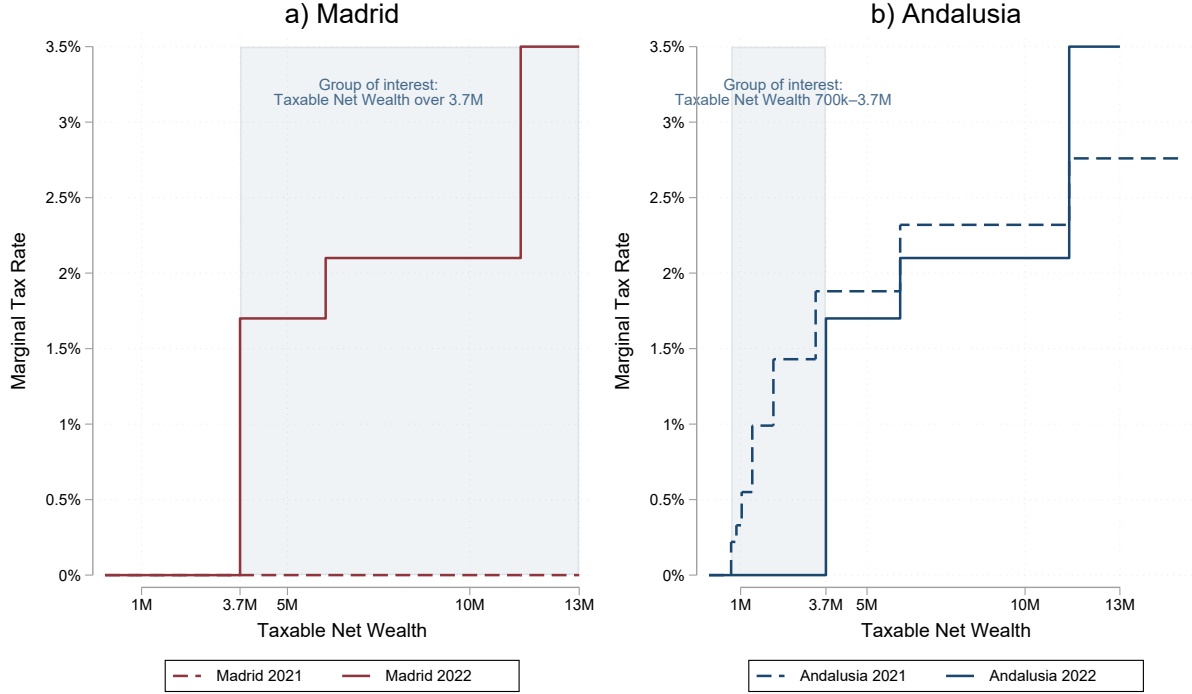
Note: This figure shows marginal tax rates and brackets for a selection of Spanish regions in 2021, prior to the introduction of the ITSGF, and in 2022, following its introduction. Rates are constructed using the schedules published by the Spanish Tax Agency. We also report the central (default) schedule, which assumes no change before or after the introduction of the new tax. We refer to these as the Control Regions (Aragon, the Canary Islands, Castile-La Mancha, Castile and León, and La Rioja) and use them as a benchmark against which regional variation can be assessed.
Source: Authors' own construction based on the Spanish Tax Agency.

Two regional cases, shown in detail in Figure 2, are particularly relevant for our empirical analysis. Madrid provides a sharp increase in effective taxation: before 2022, a 100% regional rebate fully offset the IP liability, so residents effectively paid no Wealth Tax. With the introduction of the ITSGF, taxpayers with net wealth above €3.7 million became subject to positive taxation for the first time. Andalusia provides the opposite policy change. In September 2022, the regional government introduced a 100% rebate on the IP liability, following Madrid's longstanding policy. Because the ITSGF was introduced in the same tax year, however, the rebate eliminated wealth taxation only for taxpayers below the effective ITSGF threshold, while those above €3.7 million remained subject to the central tax². Together, these reforms generate sharp changes in effective tax liabilities across regions and

²For 2023, Ley 12/2023 allowed Andalusian taxpayers to replace the general rebate with one equal to the difference, if any, between their IP and ITSGF liabilities, so that the region collects what would otherwise accrue to the central government. Below €3.7 million the option leaves liability at zero; above it, only the recipient of the revenue changes.

wealth groups, providing the identifying variation exploited in the empirical analysis.

Figure 2 : Marginal tax rates of wealth taxation in Madrid and Andalusia (2021 vs 2022)



Note: This figure shows marginal tax rates in Madrid and Andalusia before and after the introduction of the ITSGF, highlighting the segment of the net taxable wealth distribution where the reform produces a fully dichotomous change: in 2022, taxpayers in Andalusia with wealth between €700,000 and €3.7 million stop paying, while taxpayers in Madrid above €3.7 million start paying.

Source: Authors' own construction based on the Spanish Tax Agency.

3 Data

Our empirical analysis is based on the *Panel de Hogares* (PH), a longitudinal administrative sample covering approximately 7% of the population under Spain's common tax regime over the 2016–2023 period. The dataset covers 15 autonomous communities, as well as the autonomous cities of Ceuta and Melilla, excluding the Basque Country and Navarre, which operate under separate tax regimes. The PH combines personal income and wealth tax records with complementary tax information, providing detailed information on income, wealth, and selected demographic characteristics, such as age, sex, nationality, and disability status, for both tax filers and non-filers within the household.

The PH is organised into several income and wealth modules. In this paper, we rely on

the module containing the complete set of items reported in the IP, which provides detailed information on the assets and liabilities of IP filers. In 2023, the IP module of the PH included approximately 17.6% of all IP filers reported in the official statistics of the Spanish Tax Agency (AEAT) (Table 1). The share of filers represented in the PH varies across the regions considered in our analysis: approximately 34.7% of all IP filers in Madrid are included in the sample, compared with 16.7% in Andalusia and 20.3% in the control regions.

Table 1 : Sample coverage relative to the official statistics of the Spanish Tax Agency (2023).

	Observations	Wealth Tax Filers (AEAT)	Coverage
Madrid	8,516	24,533	34.71%
Andalusia	2,002	12,013	16.67%
Rest of regions	29,779	192,029	15.51%
Total	40,297	228,575	17.63%

Note: Wealth-tax filer counts are drawn from the Agencia Tributaria (AEAT). All figures correspond to 2023, the last year available in Panel de Hogares.

Source: Authors' own construction based on the Spanish Tax Agency and Panel de Hogares.

The PH does not contain ITSGF filers. We simulate ITSGF liability only for the revenue analysis of Section 4 and Section 6.2, where reconstructing the aggregate and regional evolution of combined wealth-tax revenue requires it directly. Because the ITSGF shares the same tax base and design features as the IP, we recompute it for every IP filer in the module for tax years 2022 and 2023, the only years in which the tax applies. We construct the ITSGF tax base from the itemised balance sheet, net of the additional exemptions specific to the ITSGF, and net of the general €700,000 exemption; liability is triggered when net wealth, before this general exemption, exceeds €3,000,000. The statutory schedule is then applied to the resulting base, with marginal rates of 1.7%, 2.1%, and 3.5% across successive brackets. Gross liability is subject to the joint IP and Personal Income Tax (PIT) cap, limiting combined liability to 60% of the taxpayer's PIT base, with any excess reducing the ITSGF quota by up to 80%, computed directly from the corresponding IP line items in the declaration. Finally, we credit the taxpayer's actual declared IP liability in full against this simulated ITSGF liability, floored at zero, to obtain net ITSGF liability.

For the causal analysis, we restrict the sample to a balanced panel of IP filers observed

in every year from 2016 to 2023. In the mobility analysis, individuals are assigned to treatment and control groups based on their region of residence and net wealth in 2021, the year immediately preceding the introduction of the ITSGF. This classification allows us to define treatment status before the reform and track the same individuals over time. In the asset reallocation analysis, individuals are instead classified according to their taxable net wealth in 2021. In both analyses, sampling weights are held fixed at their 2021 values, ensuring that neither treatment assignment nor the weighting scheme is affected by post-reform changes.

4 Revenue effects

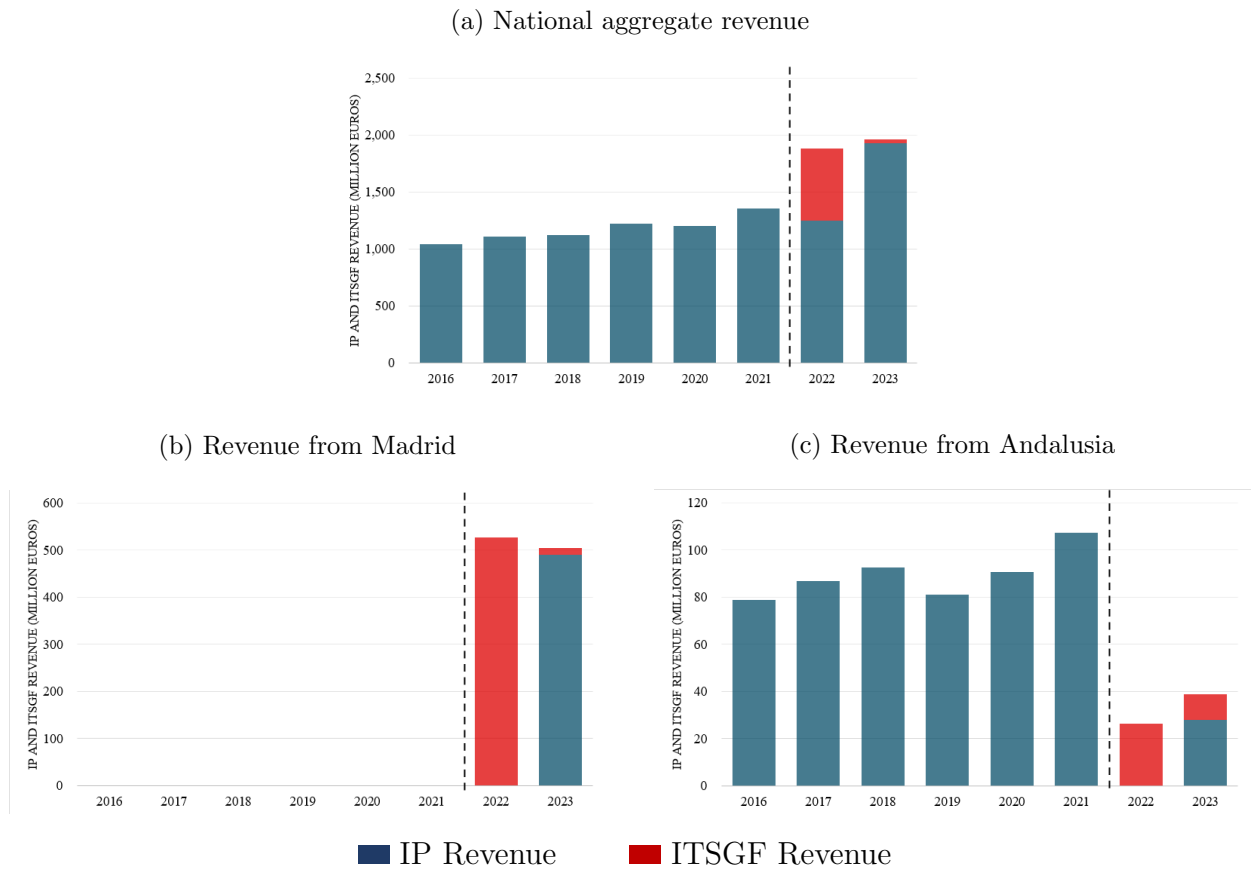
We first assess how the partial centralisation of wealth taxation through the introduction of the ITSGF affected wealth-tax revenue. Figure 3(a) reports total wealth-tax revenue published by the Spanish Tax Agency (AEAT).³ Prior to the reform, between 2016 and 2021, all wealth-tax revenue was generated by the regional Wealth Tax (IP), increasing from approximately €1.08 billion in 2016 to €1.35 billion in 2021. With the introduction of the ITSGF in 2022, combined IP and ITSGF revenue increased sharply to approximately €1.88 billion. Of this total, around €600 million was collected by the central government through the newly introduced ITSGF. Combined revenue increased further to €1.96 billion in 2023, although ITSGF revenue itself declined by around €500 million. This decline mainly reflects regulatory changes introduced by regional governments, which shifted part of the tax liability from the ITSGF back to the regional IP.

Figure 3(b) shows the simulated revenue attributable to taxpayers residing in Madrid and indicates that Madrid accounts for a substantial part of the aggregate increase. Prior to the reform, Wealth Tax revenue in Madrid was effectively zero because of its 100% IP rebate. The introduction of the ITSGF brought previously untaxed high-wealth taxpayers into positive tax liability, generating €527 million in 2022 and €504 million in 2023. Andalusia illustrates the other side of the reform, as shown in Figure 3(c). Before 2022, Wealth Tax revenue ranged between approximately €80 million and €110 million per year.

³In the Appendix, Figure A1 presents the same results based on our calculations using the *Panel de Hogares*.

The introduction of a 100% regional IP rebate in 2022 sharply reduced this revenue, while the ITSGF only partially offset the loss, generating combined wealth-tax revenue of around €26 million in 2022, all of it through the ITSGF, and €39 million in 2023. In 2023, part of this revenue shifted to the regional IP, as taxpayers above €3.7 million could opt to pay the regional tax in place of the ITSGF. As a result, combined revenue in Andalusia remained well below its pre-reform level, since the regional rebate eliminated IP liability for taxpayers below the ITSGF threshold.

Figure 3 : Evolution of wealth-tax revenue in Spain, Madrid, and Andalusia (2016–2023)



Note: Panel (a) shows national wealth-tax revenue as published by the Spanish Tax Agency, with the IP and the ITSGF plotted as separate series. Panels (b) and (c) show calculated IP and ITSGF revenue using *Panel de Hogares*, plotted separately, from taxpayers with fiscal residence in Madrid and Andalusia respectively, constructed from the itemised IP balance sheet recorded in the *Panel de Hogares*, with ITSGF liability simulated as described in Section 3.

Source: Authors' own construction based on the Spanish Tax Agency and *Panel de Hogares*.

The evolution of effective tax rates at the individual level helps explain these aggregate revenue patterns. Figure 4(a) reports the effective average tax rate, defined as combined IP and ITSGF liability relative to taxable net wealth. For Spain as a whole, the rate remained broadly stable at around 0.29-0.31% between 2016 and 2021, before increasing to approx-

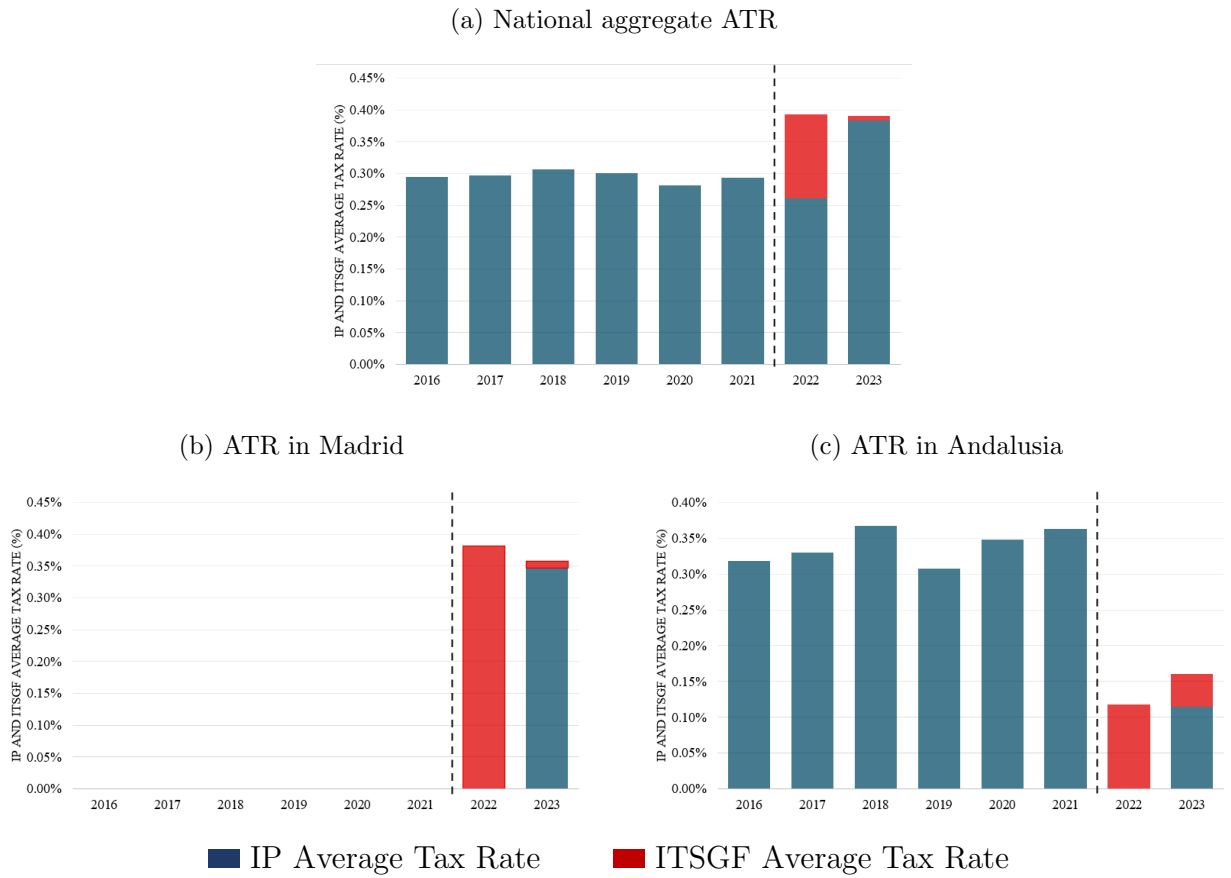
imately 0.39% in 2022 and remaining close to that level in 2023. Figure 4(b) shows that Madrid accounts for much of this increase: its average rate rose from effectively zero before the reform to approximately 0.38% in 2022. In 2023, the combined rate remained similar, at around 0.36%, but its composition shifted almost entirely from the ITSGF to the IP following Madrid’s modification of its regional rebate. The overall tax burden therefore changed little, while the associated revenue shifted from the central to the regional government.

Andalusia again displays the opposite pattern, as shown in Figure 4(c). Its average rate, around 0.31-0.37% before the reform, fell to approximately 0.12% in 2022 after the introduction of the regional rebate, with the remaining liability arising entirely from the ITSGF. It recovered only partially, to around 0.16%, in 2023, when taxpayers above €3.7 million could opt to pay the regional IP in place of the ITSGF, shifting part of the remaining liability to the regional tax. Taken together, Madrid and Andalusia show both the effectiveness and the limits of the ITSGF as a coordination mechanism. In Madrid, the reform eliminated the possibility of maintaining a zero effective tax burden for taxpayers subject to the ITSGF and generated substantial additional revenue. In Andalusia, however, the regional rebate reduced taxation below the ITSGF threshold, producing a substantial decline in both revenue and the average tax rate relative to the pre-reform period. At the same time, the 2023 policy adjustments in both regions show that regional governments retained an additional margin of response: they could modify their own IP rules to reclaim part of the revenue that would otherwise accrue to the central government.

These findings are closely related to the broader literature on tax coordination. Kanbur and Keen (1993) show that, under decentralised tax competition, a minimum tax can mitigate the inefficiencies generated by non-cooperative tax setting without requiring full harmonisation. In the Spanish context, Agrawal et al. (2025) show through counterfactual simulations that Madrid could obtain higher total regional revenues under a positive harmonised Wealth Tax rate than under its zero-rate policy. Our results provide empirical evidence consistent with these mechanisms. By constraining the ability of low-tax regions to eliminate Wealth Tax liability for taxpayers subject to the ITSGF, the reform generated a substantial increase in aggregate wealth-tax revenue, driven primarily by Madrid. At the same time, Andalusia illustrates the limits of partial coordination: the regional rebate can

still eliminate IP liability below the threshold at which the central tax becomes binding. Finally, the 2023 policy adjustments in both regions reveal an additional margin of strategic response. Once the ITSGF constrains the scope for reducing the overall tax burden, regional governments can adjust their own Wealth Tax rules to capture revenue that would otherwise accrue to the central government.

Figure 4 : Evolution of wealth-tax average tax rate in Spain, Madrid, and Andalusia (2016–2023)



Note: All series are calculated using *Panel de Hogares*. Panel (a) shows the national average tax rate, combining simulated IP and ITSGF liabilities across all taxpayers, plotted as separate series. Panels (b) and (c) show the same average tax rate, decomposed into its IP and ITSGF components, for taxpayers with fiscal residence in Madrid and Andalusia respectively. All series are constructed from the itemised IP balance sheet recorded in the *Panel de Hogares*, with ITSGF liability simulated as described in Section 3.

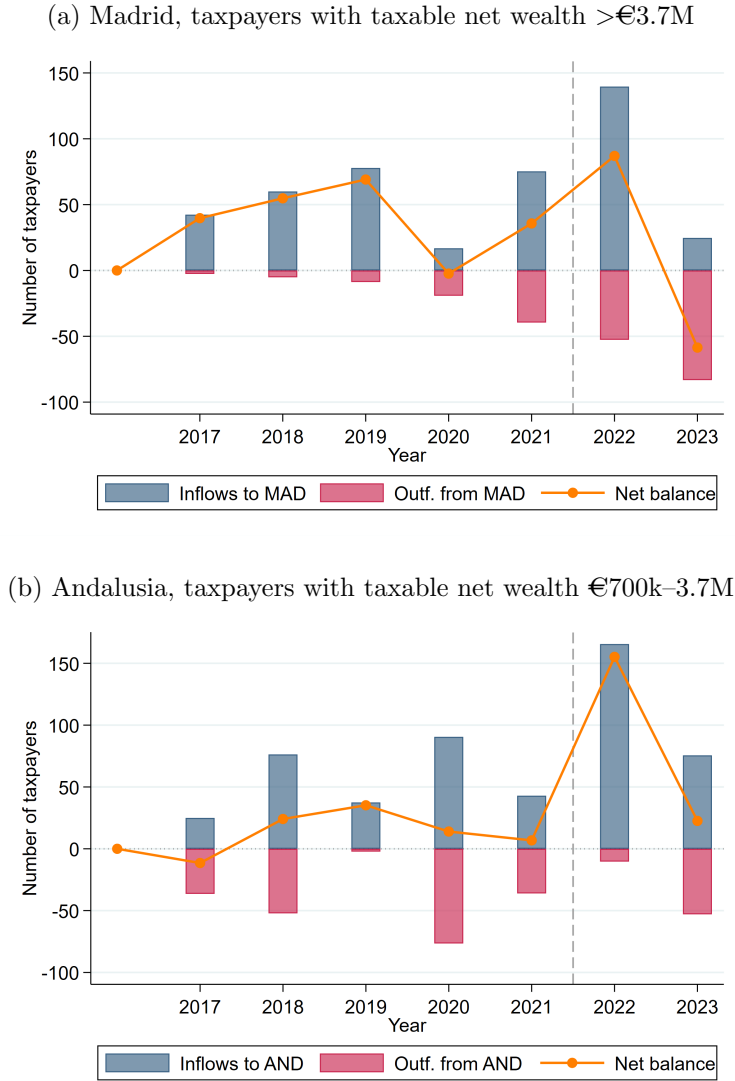
Source: Authors' own construction based on the Spanish Tax Agency and *Panel de Hogares*.

5 Regional mobility

5.1 Descriptive evidence

We next examine whether the partial harmonisation introduced by the ITSGF led to changes in taxpayer mobility across regions. As descriptive evidence, Figure 5 plots annual inflows, outflows and the net balance for each region, and the resulting net migration balance for the taxpayer groups affected by the reform in Madrid and Andalusia. Panel (a) focuses on Madrid taxpayers with taxable net wealth above €3.7 million. The net migration balance increased steadily between 2017 and 2022, with the exception of 2020, when it fell to around zero amid the mobility restrictions associated with the COVID-19 pandemic. In 2023, the balance turns negative for the first time, a pattern that is consistent with the removal of Madrid’s previous tax advantage after the ITSGF came fully into effect

Figure 5 : Inflows and outflows of taxpayers to and from the treated region



Note: Annual inflows to and outflows from the treated region, and the resulting net balance. Panel (a) is Madrid, for taxpayers with taxable net wealth above €3.7 million — the group made newly liable for the ITSGF. Panel (b) is Andalusia, for taxpayers between €700,000 and €3.7 million — the group whose regional wealth-tax liability was eliminated by the 2022 rebate. The vertical dashed line marks 2021, the year prior to the reform.

Source: Authors' own construction.

Panel (b) focuses on Andalusia, considering taxpayers with net taxable wealth between €700,000 and €3.7 million, whose regional wealth-tax liability was eliminated in 2022. Before the reform, the net migration balance displays no clear trend: it is negative in 2017, modestly positive in 2018 and 2019, and close to zero in 2020 and 2021. In the two post-reform years, however, the balance is clearly positive, indicating net inflows of taxpayers into Andalusia. The increase is particularly pronounced in 2022, when the net migration balance rises to nearly 150 taxpayers following the elimination of the regional wealth tax

for this group. The balance increases further in 2023, although by less than in 2022.

5.2 Empirical strategy

Following Agrawal et al. (2025), we examine the evolution of the share of taxpayers from a given wealth group residing in a given region, comparing taxpayers affected by the ITSGF with a comparison group whose tax liability remained unchanged. Treatment status is defined using taxable net wealth in 2021, prior to the reform and to any potential anticipatory response.

For Madrid, the treatment group consists of taxpayers with taxable net wealth above the €3.7 million, who became subject to the ITSGF. The comparison group includes taxpayers just below the threshold, with taxable net wealth between €3.2 and €3.7 million, whose tax liability remained unchanged under Madrid’s 100 percent regional wealth-tax rebate. This range keeps the comparison group close enough to the threshold to ensure comparability with treated taxpayers while retaining a sufficiently large sample for the analysis.

In Andalusia, the treatment and comparison groups are reversed. Taxpayers with taxable net wealth between €3.2 and €3.7 million form the treatment group, as their regional wealth-tax liability was eliminated by the rebate, while those above €3.7 million, who remained subject to wealth taxation throughout the period, serve as the comparison group. The analysis is based on a balanced panel of individuals observed in each year from 2016 to 2023.

The relevant outcome is the population share:

$$n_{rit} = \frac{N_{rit}}{N_{it}}, \quad (1)$$

where N_{rit} is the weighted number of individuals in group $i = T, C$ resident in region r in year t , and N_{it} is the group’s national total in that year; weights are fixed at their 2021 values. In a balanced panel the log share and the log count yield identical estimates, since

N_{it} is absorbed by the fixed effects below.⁴ We estimate the event-study specification

$$\ln n_{rit} = R_r \times D_i \times \sum_{\substack{y=-5 \\ y \neq 0}}^2 \beta_y \mathbf{1}(y = t - 2021) + X'_{rit} \alpha + \zeta_{ri} + \zeta_t + \nu_{rit}, \quad (2)$$

where $\mathbf{1}(y = t - 2021)$ are event-time indicators relative to the omitted 2021 base year, R_r indicates the treated region (Madrid or Andalusia, respectively), and D_i indicates the treatment group. The coefficients β_y on the triple interaction give the evolution of the treated group's log share in the treated region relative to the comparison group and relative to 2021; the pre-reform coefficients ($y < 0$) test the identifying assumption and the post-reform coefficients ($y > 0$) measure the response.

The fixed effects ζ_{ri} and ζ_t are region-by-treatment and year effects, respectively. The vector X_{rit} contains the filer and treated-region indicators, filer-by-year and filer-by-region fixed effects, and — critically for identification — treated-region-by-year fixed effects, which absorb any region-specific shock affecting the treatment and comparison groups alike. As Agrawal et al. (2025) note, this specification is isomorphic to one with full region-by-year fixed effects: any shock specific to the treated region affects the treatment and comparison groups alike and is absorbed, so the β_y reflect only movements of the treatment group relative to the comparison group within the treated region.

A potential threat to identification is the presence of region-specific shocks that coincide with the reform and affect the treatment and comparison groups differently. Our identifying assumption is that, absent the reform, unobserved changes in the relative attractiveness of the treated region would have affected both groups similarly. This assumption is plausible because both groups are defined using pre-reform taxable net wealth and are drawn from the same upper tail of the wealth distribution, differing mainly in whether their 2021 wealth lies above or below the €3.7 million threshold. We assess the validity of this assumption by examining pre-reform dynamics. The absence of differential pre-trends would indicate that the region's share of the treatment and comparison groups evolved similarly before the reform, providing support for the parallel-trends assumption.

⁴This equivalence follows Agrawal et al. (2025): in a balanced sample the region's share of a group and its population count differ only by the group-year total, which the year and region-by-group effects absorb.

5.3 Results

Figure 6 shows the evolution of log population changes for Madrid.⁵ The treatment and comparison groups follow similar trajectories before the reform, with no evidence of differential pre-trends. Both groups increase over this period, consistent with Madrid becoming increasingly attractive to high-wealth taxpayers while neither group faced positive wealth-tax liability. The joint test of the pre-reform coefficients does not reject under either conventional inference or the wild cluster bootstrap ($p = 0.205$ and $p_{\text{boot}} = 0.484$), supporting the identifying assumption.

After the reform, the differential change in Madrid’s share of the treated group is small and statistically insignificant: $+0.046$ in 2022 ($p = 0.19$) and $+0.030$ in 2023 ($p = 0.50$). Although Madrid’s share of the treated group remains above its pre-reform level, the estimated coefficient declines in 2023 for the first time over the entire series. At the same time, Madrid’s share of the comparison group continues to increase, but only modestly. This pattern is consistent with a weakening of Madrid’s previous tax advantage rather than an immediate reversal in mobility.

The results are similar when alternative comparison groups are used. D1 in the Appendix restricts the comparison group to taxpayers with taxable net wealth between €3.4 and €3.7 million. Its trajectory remains close to that of the baseline €3.2–3.7 million group, although the increase in Madrid’s share is larger in the first post-reform year and reaches a level similar to that of the treatment group. D2 in the Appendix instead broadens the comparison group to taxpayers with taxable net wealth between €2.2 and €3.7 million. The overall pattern remains similar, although the increase in Madrid’s share of this group declines slightly in 2023. The main mobility pattern is therefore robust to alternative definitions of the comparison group.

Figure 7 shows the evolution of log population shares in Andalusia. Before the reform, there is little evidence that Andalusia was becoming increasingly attractive to either group, consistent with both treatment and comparison taxpayers being subject to the regional wealth tax. This changes after the reform. For the treated group, whose regional wealth-tax liability was fully offset by the 100 percent rebate and who remained below the threshold of

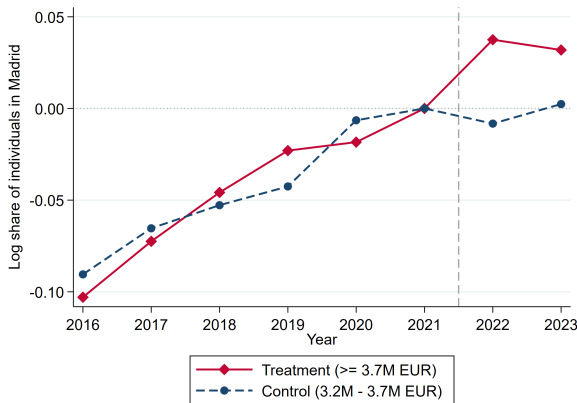
⁵The full set of coefficients, standard errors, and sample counts is reported in Appendix Table C1.

the national tax, Andalusia’s relative stock increases markedly. By contrast, the comparison group, which remained subject to wealth taxation, shows only a modest increase relative to its 2021 level. The resulting differential is large and positive, reaching +0.375 in 2022 and +0.393 in 2023 (both $p < 0.001$). However, the pre-reform coefficients are large, mostly positive, and individually significant, and the conventional joint test strongly rejects the null of no differential pre-trends ($p < 0.001$). Although the wild cluster bootstrap does not reject ($p_{\text{boot}} = 0.239$), we do not regard this as sufficient evidence to support a clean causal interpretation. The post-reform increase is therefore consistent with the descriptive mobility patterns documented above, but cannot be attributed causally to the introduction of the 100 percent regional wealth-tax rebate.

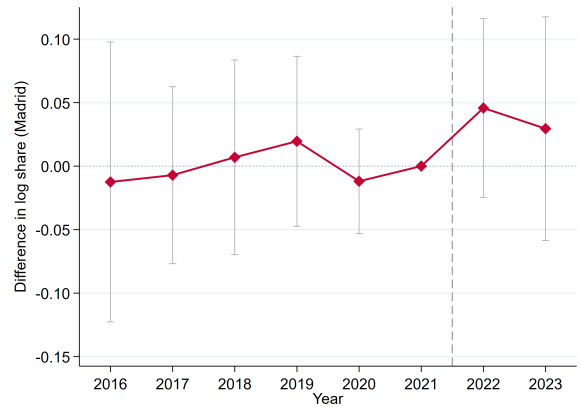
Results are similar across alternative comparison groups. Appendix Figures D3 and D4 show that the main post-reform pattern persists when using taxpayers with taxable net wealth of €3.4–3.7 million or €2.2–3.7 million as comparison groups, although the increase is smaller for the broader group. The descriptive results are therefore robust, while pre-trend concerns continue to limit a causal interpretation.

Figure 6 : Effect of the ITS GF on the log share of taxpayers residing in Madrid

(a) Treatment ($\geq \text{€}3.7\text{M}$) and control ($\text{€}3.2\text{--}3.7\text{M}$)



(b) Difference (treatment – control)

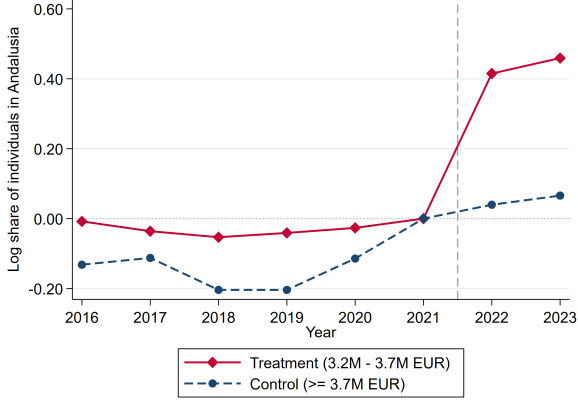


Note: Event-study estimates of the effect of the ITS GF on the log share of taxpayers residing in Madrid. Panel (a) plots the treatment and control groups separately; panel (b) plots the coefficients on the triple interaction in equation (2). The dashed line marks 2021, the year prior to the reform. Standard errors are clustered at the region-by-treatment level; 95% confidence intervals. Balanced panel, 2016–2023.

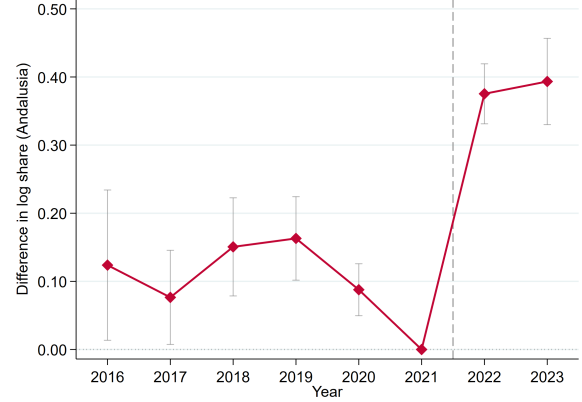
Source: Authors’ own calculations.

Figure 7 : Effect of the reform on the log share of taxpayers residing in Andalusia

(a) Treatment (€3.2–3.7M) and control ($\geq$ €3.7M)



(b) Difference (treatment – control)



Note: Event-study estimates of the effect of the 2022 regional rebate on the log share of taxpayers residing in Andalusia. Panel (a) plots the treatment and control groups separately; panel (b) plots the coefficients on the triple interaction in equation (2). The dashed line marks 2021, the year prior to the reform. Standard errors are clustered at the region-by-treatment level; 95% confidence intervals. Balanced panel, 2016–2023.
Source: Authors' own calculations.

The short post-reform period also calls for caution in interpreting the magnitude of the mobility response. The ITSGF was announced only in late September 2022 and applied to wealth held on 31 December of that year, leaving essentially no time for a change of fiscal residence to affect liability in 2022 and only one full year thereafter in which location could respond. Moreover, the tax was initially introduced as a temporary measure and was not made permanent until December 2023, which may have delayed costly relocation decisions while taxpayers waited for the policy environment to become clearer. A similar delay in adjustment is documented by Agrawal et al. (2025) following the 2011 reintroduction of the wealth tax. Additional post-reform years are therefore needed to assess whether the weakening observed in Madrid persists and whether the descriptive increase in Andalusia continues.

6 Asset reallocation

With the introduction of the ITSGF, taxpayers in Madrid with taxable net wealth above €3.7 million became liable for the wealth tax for the first time since the regional rebate was introduced. In Andalusia, the 2022 regional rebate eliminated the wealth-tax liability of taxpayers between €700,000 and €3.7 million, while those above the threshold remained

taxed, through the ITSGF or, from 2023 and at their option, through the regional IP. Taxpayers in the same wealth ranges in regions that had never rebated the tax saw no change in their liability. We exploit these contrasts in an individual-level difference-in-differences event study:

$$\ln(1 + y_{it}) = \alpha_i + \alpha_t + \mathbf{x}_{it}'\theta + \sum_{k \neq 0} \beta_k (T_i \times D_{kt}) + \varepsilon_{it}, \quad (3)$$

where T_i indicates residence in the treated region in 2021 — Madrid in the design where the tax is introduced, Andalusia in the design where it is removed — k indexes event time relative to 2021 ($k = -5, \dots, -1, 1, 2$), α_i and α_t are individual and year fixed effects, and $\mathbf{x}_{it}$ contains household-type indicators constructed from the number of adults and minors in the fiscal household. Region of residence in 2021 is absorbed by the individual fixed effect and is not separately identified.

Treatment is assigned by region and taxable wealth in 2021, the pre-reform base year; fixing group membership before the reform ensures it cannot reflect behavioural responses to it. In the Madrid design, the treated group comprises taxpayers resident in Madrid in 2021 with taxable net wealth above the effective €3.7 million threshold — the group the ITSGF newly bound. In the Andalusian design, the treated group comprises taxpayers resident in Andalusia in 2021 with taxable net wealth between €700,000 and €3.7 million — the group whose liability the 2022 rebate eliminated. In both designs the control group comprises taxpayers in the same wealth range as the treated group, resident in the five autonomous communities that made no change to their wealth-tax schedule over the sample period: Aragon, Canary Islands, Castile-La Mancha, Castile and Leon, and La Rioja.

Identification requires that, absent the reform, reported taxable wealth of treated taxpayers would have evolved in parallel with that of taxpayers in the same wealth band in the control regions. Treated and control taxpayers are comparable in the base year on demographic structure, median wealth and portfolio composition (Tables B1 and B2, Figures B1–B3); differences in means reflect a small number of very large fortunes and are absorbed by the individual fixed effects. We assess the assumption directly by testing the pre-reform coefficients jointly for each outcome, and we report throughout the estimates for taxpayers on the other side of the threshold in the treated region — whose effective liability

was unchanged — as a within-region placebo. The estimating sample is the balanced panel of individuals observed in all eight years with non-missing, non-negative taxable net wealth: 2,562 treated and 453 control taxpayers above the threshold, and 803 and 3,410 respectively below it. Taxpayers who change region after 2021 are retained and remain assigned to their 2021 region, so the estimates are intention-to-treat with respect to baseline residence. Since few sampled taxpayers change region of residence over the sample period, the estimates are close to the effect on those who remained exposed, and the assignment keeps the sample free of a selection rule that is itself a potential response to the reform. Observations are weighted by the individual’s 2021 calibration factor, held fixed across years, so that the estimates describe a fixed population rather than one reweighted by post-reform sample composition.

We study the tax base and its principal components, taken directly from the itemised balance sheet of the wealth-tax declaration: net taxable wealth, non-exempt assets, total exempt assets, exempt business assets, deductible liabilities, real estate, deposits and capital gains. Coefficients are expressed in log points; where they are large, we also report the implied percentage change, $e^\beta - 1$.

Treatment is assigned at regional level, and standard errors are accordingly clustered by region of residence in 2021.⁶ Because the estimating sample contains six regions, we conduct all inference with a wild cluster bootstrap with Webb weights and 9,999 replications, which remains valid with a small number of clusters (Cameron et al., 2008). Reported p -values are bootstrap p -values throughout.⁷

6.1 Results

We present the estimates for the two designs in turn, beginning with Madrid.

Figure 8 presents the effect of the introduction of the ITSGF on taxable net wealth. Panel (a) shows treated and control taxpayers following closely similar trajectories through 2021, and the joint bootstrap test of the pre-reform coefficients does not reject ($p = 0.15$).⁸

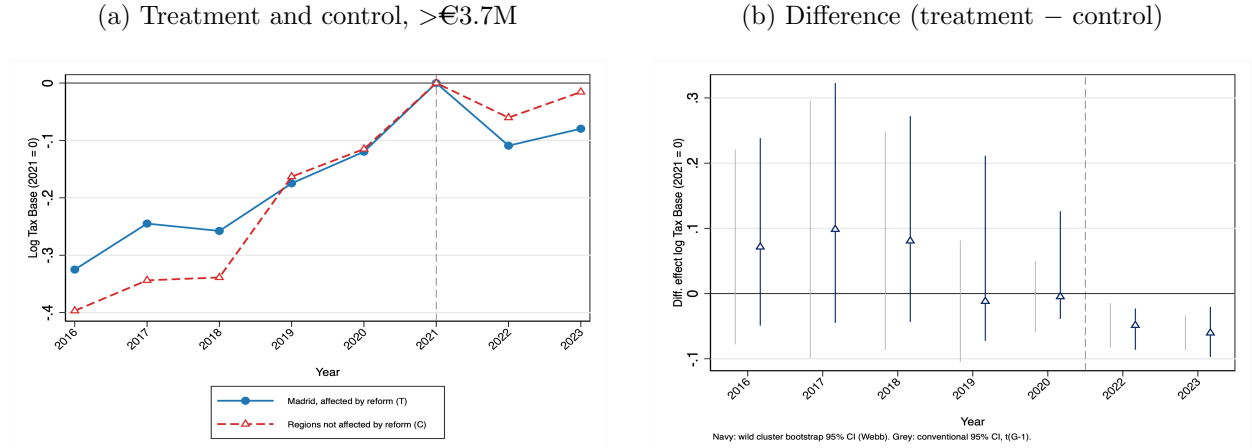
⁶Appendix F.2 reports estimates clustered at the individual level as a robustness check.

⁷The confidence bands shown in the event-study figures are obtained by test inversion; conventional bands are displayed alongside for comparison.

⁸The conventional test on the same restriction rejects at any conventional level ($p < 0.001$), illustrating the unreliability of asymptotic inference at this cluster count.

Panel (b) plots the difference. Relative to 2021 and to the control regions, Madrid taxpayers above the threshold report 0.049 log points less taxable wealth in 2022 ($p = 0.013$) and 0.060 in 2023 — approximately 4.8 and 5.8 percent less.⁹ The estimates are robust to excluding, within each wealth group, taxpayers above the 99th percentile of 2021 taxable net wealth.¹⁰

Figure 8 : Event-study estimates: taxable net wealth, Madrid vs control regions



Note: This figure presents event-study estimates of the effect of the ITSGF on taxable net wealth, comparing taxpayers with net wealth above €3.7 million residing in Madrid in 2021 (treatment) with taxpayers above the same threshold residing in control regions with unchanged schedules (Aragon, Canary Islands, Castile-La Mancha, Castile and León, and La Rioja). The left panel plots the treatment and control groups separately, normalised to zero in 2021. The right panel plots the difference between the treatment and control groups. The vertical dashed line marks 2021, the year prior to the reform. Navy bands are 95% wild cluster bootstrap confidence intervals (Webb weights, test inversion); grey bands are conventional 95% intervals based on standard errors clustered at the regional level. The bootstrap intervals are the basis for inference. Individuals are required to appear in the data in every year between 2016 and 2023 to be included in the regression sample. Source: Authors' own construction.

The decline in the base reflects a shift in composition rather than in total wealth. Non-exempt assets fall by 0.041 in 2022 and 0.050 in 2023, with pre-reform coefficients jointly insignificant, while over the same period total exempt assets rise sharply, by 0.436 and 0.771 log points, with flat pre-trends (Figure 9).¹¹ Exponentiated, the latter correspond to increases of roughly 55 and 116 per cent in the average reported exempt position — a magnitude we qualify below. The two responses are consistent with wealth moving from the taxable base into exempt categories.

Fifty-nine percent of treated filers report no exempt holdings in the base year, and the outcome is accordingly measured as $\ln(1 + y)$. The estimated response is concentrated at the extensive margin: the share of treated filers reporting any exempt assets rises from 41

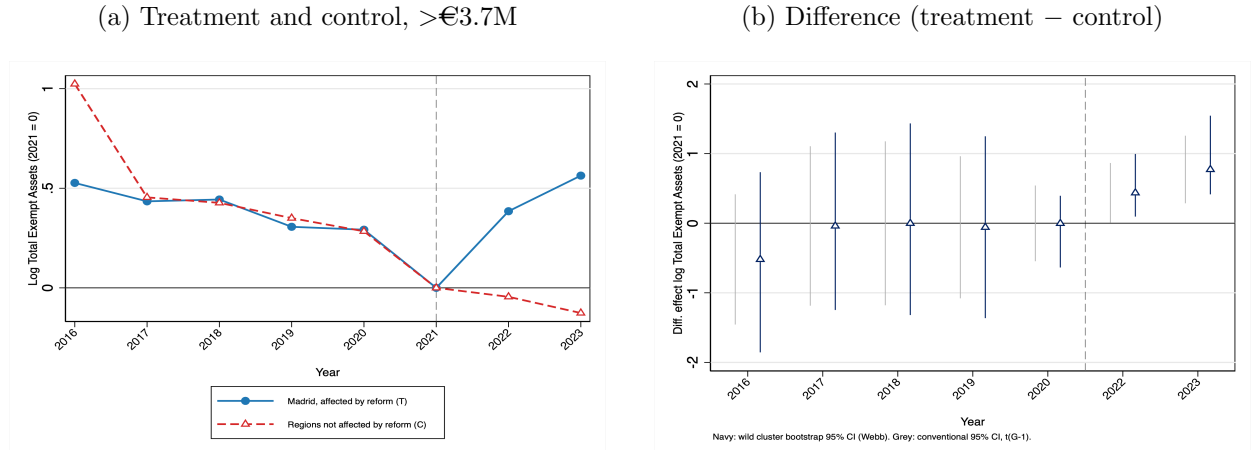
⁹See Appendix Table C2 for detailed regression results.

¹⁰See Appendix Figure F10 for the corresponding event-study figures; the estimates are essentially unchanged.

¹¹See Appendix Figure E1 for the corresponding event-study estimates on non-exempt assets.

to 46 percent between 2021 and 2023, while it declines slightly in the control regions.¹² The coefficient is therefore driven largely by taxpayers entering exempt categories rather than by the amounts involved, and its magnitude is not invariant to the units of measurement (Chen and Roth, 2024). The estimates establish that treated taxpayers moved wealth into exempt assets.¹³

Figure 9 : Event-study estimates: exempt assets, Madrid vs control regions



Note: This figure presents event-study estimates of the effect of the ITSGF on exempt assets, comparing taxpayers with net wealth above €3.7 million residing in Madrid in 2021 (treatment) with taxpayers above the same threshold residing in control regions with unchanged schedules (Aragon, Canary Islands, Castile-La Mancha, Castile and León, and La Rioja). The left panel plots the treatment and control groups separately, with log exempt assets normalised to zero in 2021. The right panel plots the difference between the treatment and control groups. The vertical dashed line marks 2021, the year prior to the ITSGF's introduction. Standard errors are clustered at the regional level, with inference based on a wild bootstrap given the small number of clusters. Individuals are required to appear in the data in every year between 2016 and 2023 to be included in the regression sample.

Source: Authors' own construction.

As discussed in Section 2, the business-asset exemption can be satisfied through corporate restructuring rather than through the disposal of assets: existing assets may be contributed to a company via a capital increase, shareholder loans may be converted into equity, and an owner-director's remuneration may be adjusted to meet the management requirement. Such operations involve neither a sale nor a transfer of funds. For unlisted shareholdings, moreover, the reported value is the book value and, absent an audit requirement, is not subject to external verification. The timing of the response is consistent with reclassification of this kind: the reform was enacted in late December 2022, leaving scope for year-end restructuring but not for adjustment through saving. So is the composition of top portfolios:

¹²Shares of treated filers reporting positive exempt assets: 41.2 percent in 2021 and 45.7 percent in 2023. Authors' computation on the estimation sample.

¹³The revenue calculations of Section 6.2 are unaffected: they use the taxable-base coefficients — a pure log outcome, for which the proportional interpretation is exact — and price the response at the individual level, without relying on this conversion.

among Madrid filers in 2021, unlisted company shares account for most assets above the 90th percentile of the wealth distribution.¹⁴ The speed and size of the response are consistent with taxpayers using this channel, and with the evidence for Catalonia in Mas-Montserrat et al. (2025), who identify the business exemption as a principal avoidance channel under the same statutory framework. Decomposing the increase, the estimates on exempt business assets and on unlisted shareholdings are large and positive (0.313 and 0.412; 0.369 and 0.521, respectively) but imprecisely estimated at this cluster count.¹⁵ We accordingly attribute the aggregate movement to exempt categories as a whole rather than to a single statutory channel.

To assess whether the estimated response reflects the reform rather than a Madrid-specific shock, we re-estimate equation (3) for Madrid taxpayers below €3.7 million, whose effective liability was unchanged: the regional rebate continued to eliminate their IP, and the ITSGF did not reach them. No outcome shows a differential response, consistent with an effect specific to the taxpayers whose liability the reform changed rather than with a Madrid-wide shock.¹⁶

Andalusia provides the reform in reverse. Decreto-ley 7/2022 introduced a 100 percent rebate on the IP from the 2022 tax year, reducing the liability of taxpayers between €700,000 and €3.7 million to zero. For 2023, Ley 12/2023 allowed taxpayers to opt instead for a rebate equal to the difference between their IP and ITSGF liabilities. Since ITSGF liability is zero in this band, the option leaves their liability at zero, so the removal remains in force for the treated group throughout the post-reform period. Applying the same design with Andalusia as the treated region and the same five control regions, taxpayers who exited the wealth tax report differentially higher taxable wealth after the reform: 0.013 in 2022 and 0.069 in 2023 — the latter significant and equal to approximately 7.2 percent (Figure 10). The 2023 estimate mirrors the Madrid decline — comparable magnitude, opposite sign. This symmetry points to a change in reporting rather than in wealth itself. The 2022 estimate is small and insignificant under the preferred inference, so the symmetry is established for

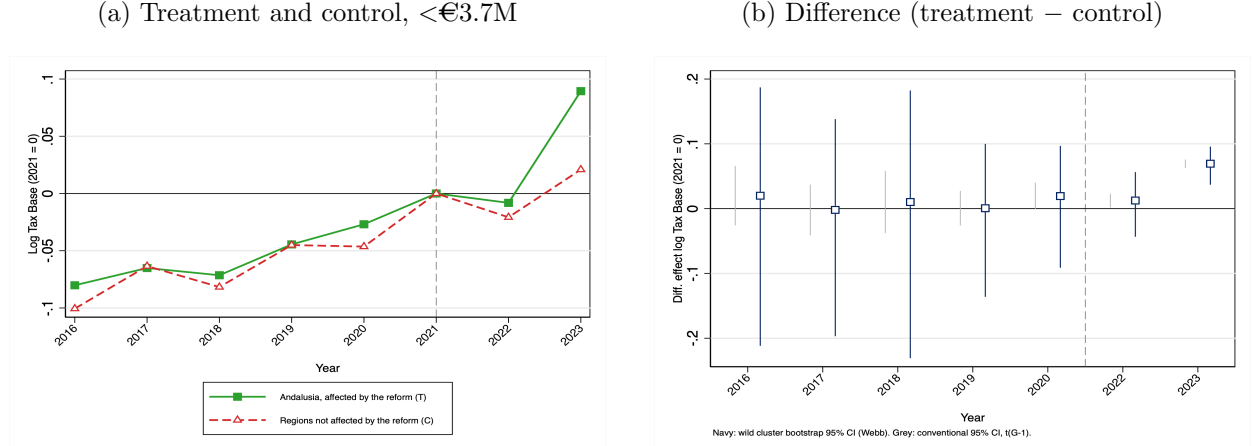
¹⁴See Appendix Figure B1.

¹⁵See Appendix Table C3 for the full event-study estimates. Since baseline zeros are even more prevalent for the individual components than for the aggregate, the caution on magnitudes discussed above applies a fortiori, and we read these estimates as evidence on the direction of the response.

¹⁶See Appendix Figures F1–F2 for the placebo event studies on taxable wealth and exempt assets.

the second post-reform year only.¹⁷

Figure 10 : Event-study estimates: taxable net wealth, Andalusia vs control regions



Note: This figure presents event-study estimates of the effect of the 2022 regional reform on taxable net wealth, comparing taxpayers with net wealth between €700,000 and €3.7 million residing in Andalusia in 2021 (treatment), who cease to face any wealth-tax liability from 2022 onward, with taxpayers in the same wealth range residing in control regions with unchanged schedules (Aragon, Canary Islands, Castile-La Mancha, Castile and León, and La Rioja). The left panel plots the treatment and control groups separately, normalised to zero in 2021. The right panel plots the difference between the treatment and control groups. The vertical dashed line marks 2021, the year prior to the reform. Navy bands are 95% wild cluster bootstrap confidence intervals (Webb weights, test inversion); grey bands are conventional 95% intervals based on standard errors clustered at the regional level. The bootstrap intervals are the basis for inference. Individuals are required to appear in the data in every year between 2016 and 2023 to be included in the regression sample.

Source: Authors' own construction.

In the €700k–3.7 million band, portfolios are dominated by real estate and deposits rather than by business assets.¹⁸ The scope for reclassification into exempt categories is therefore limited — and indeed exempt assets show no differential response in either post-reform year.¹⁹ The adjustment operates instead through the two remaining reporting margins. Reported non-exempt assets rise by 0.043 log points in 2023 ($p = 0.006$; Figure 11), and reported deductible liabilities fall by 0.45 in 2022 and 0.87 in 2023 (Figure 12) — the latter corresponding to a reduction of roughly 58 percent, though neither debt coefficient is significant at the five percent level under the preferred inference.²⁰ The two margins jointly account for the increase in the base: with liabilities amounting to roughly four percent of assets in this band, the asset-side response contributes about 4.5 percentage points and the debt-side about 2.4, consistent with the estimated 6.9 log-point increase. Both margins reflect costly reporting: claiming deductions requires documentation, and understating asset values carries audit risk, so that only a positive liability makes these reporting choices

¹⁷See Appendix Table C2 for detailed regression results.

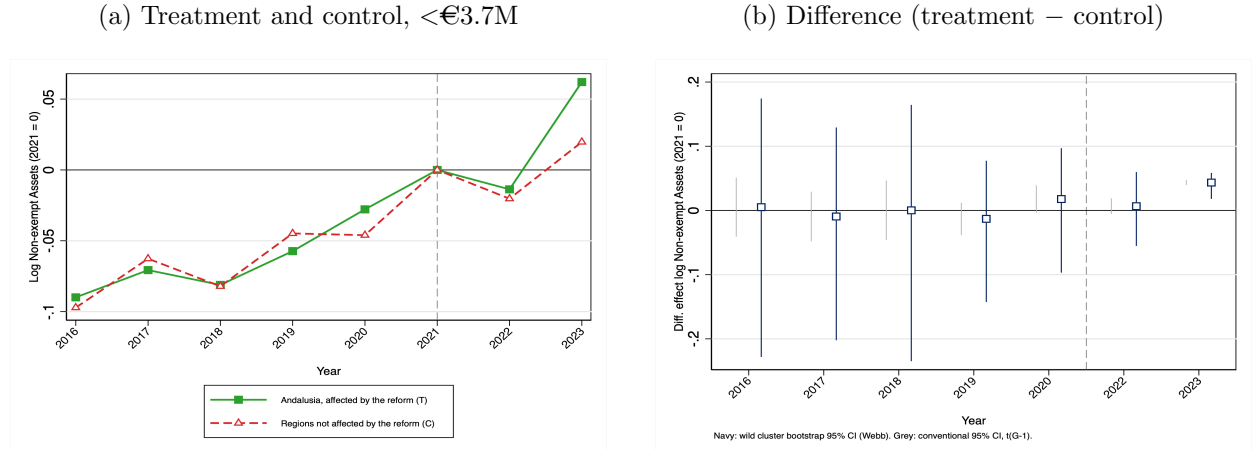
¹⁸See Appendix Figure B2.

¹⁹See Appendix Figure E2.

²⁰See Appendix Table C3 for the corresponding event-study estimates.

worthwhile. Once the liability is removed, the incentive to minimise the reported base disappears, and reported wealth adjusts on both sides of the balance sheet. A fall in reported debts of this magnitude within two years is difficult to attribute to actual deleveraging. It is instead consistent with a reporting response: debts enter the tax base at face value, so the margin operates through whether a debt is claimed rather than through its valuation — deductibility requires documentation linking the debt to the assets it finances, and is denied altogether for debts financing exempt assets (Art. 25 of Ley 19/1991). The corresponding placebo, Andalusian taxpayers above €3.7 million, who remained taxed throughout the period, shows no differential response in taxable wealth (-0.027 in 2022 and -0.025 in 2023, $p = 0.28$), consistent with an effect specific to the band whose liability the reform removed.

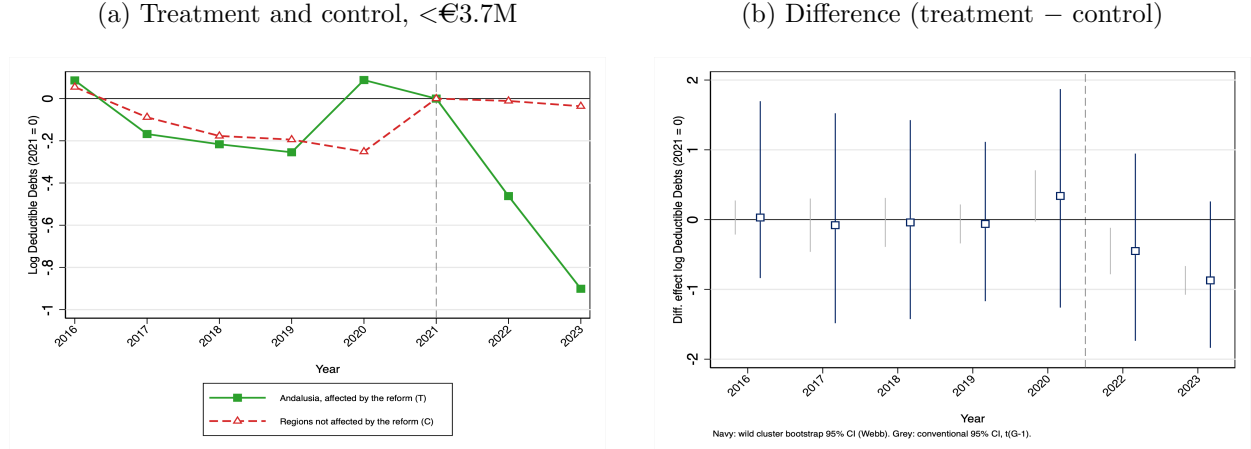
Figure 11 : Event-study estimates: non-exempt assets, Andalusia vs control regions



Note: This figure presents event-study estimates of the effect of the 2022 regional reform on non-exempt assets, comparing taxpayers with net wealth between €700,000 and €3.7 million residing in Andalusia in 2021 (treatment), who cease to face any wealth-tax liability from 2022 onward, with taxpayers in the same wealth range residing in control regions with unchanged schedules (Aragon, Canary Islands, Castile-La Mancha, Castile and León, and La Rioja), whose tax treatment is unaffected by the reform. The left panel plots the treatment and control groups separately, with log non-exempt assets normalised to zero in 2021. The right panel plots the difference between the treatment and control groups. The vertical dashed line marks 2021, the year prior to the reform. Standard errors are clustered at the regional level, with inference based on a wild bootstrap given the small number of clusters. Individuals are required to appear in the data in every year between 2016 and 2023 to be included in the regression sample.

Source: Authors' own construction.

Figure 12 : Event-study estimates: deductible debts, Andalusia vs control regions



Taken together, the two designs point to the same conclusion from opposite directions. Where the reform created a liability, reported taxable wealth promptly fell and exempt holdings rose; where it removed one, reported taxable wealth rose and reported debts fell. In both cases taxpayers changed what they reported, rather than what they owned — a distinction with direct consequences for revenue, to which we now turn.

6.2 Revenue implications

We simulate the IP and the ITSGF for 2016–2023 on the Panel de Hogares microdata, applying region- and year-specific schedules to each taxpayer's reconstructed net wealth. Two features of the liability calculation cannot be recomputed from IP line items alone and are recovered from the observed declarations instead. First, the joint IP–PIT cap limits the sum of gross PIT and IP liabilities to 60% of the PIT base, with any excess reducing the IP quota by up to 80%; the PIT-side quantities entering this cap are not observable in the IP records, so we recover each taxpayer's ratio of the cap-relevant quantity to the gross IP quota and reapply it to the simulated quota, so that the cap binds in the simulation exactly as in the observed declaration. Second, regional deductions and rebates, set independently by each autonomous community, are recovered analogously as the observed share of their

corresponding pre-adjustment amount and reapplied to the simulated liability. These two proportional adjustments preserve each taxpayer’s actual fiscal treatment — including a binding cap and full regional rebates such as Madrid’s — under counterfactual definitions of the taxable base.

The benchmark is the counterfactual revenue absent any behavioural response. Simulated on the observed 2021 cross-section of Madrid taxpayers — the last pre-announcement year — with the full liability calculation (the €700,000 minimum exemption, the progressive schedule, the joint cap with its 20% minimum payment, and the credit for regional IP paid), aggregate ITSGF revenue is $R_0 = \text{€}490\text{m}$ from 7,423 effective declarants. The same simulation infrastructure, applied to the IP over 2016–2023, closely tracks the collections published by the Tax Agency (Figure 3) and the simulated one (Figure A1), validating the machinery on which both exercises in this section rest.

We first quantify the revenue cost of the estimated behavioural response. A first-order approximation converts the response into revenue in four steps: the coefficient is applied to mean wealth per declarant, priced at the average effective rate, aggregated across declarants, and expressed relative to the benchmark,

$$\Delta W_k = \hat{\beta}_k \bar{W}_{2021}, \quad \Delta C_k = \Delta W_k \bar{t}_{2021}, \quad \Delta R_k = \Delta C_k N_{2021}, \quad \Delta R_k(\%) = \frac{\Delta R_k}{R_0}. \quad (4)$$

With $\hat{\beta}_{2022} = -0.049$ and $\hat{\beta}_{2023} = -0.060$, this yields losses of €23.9m and €29.6m, or 4.9% and 6% of R_0 . Since $R_0 = \bar{t}_{2021} \bar{W}_{2021} N_{2021}$ by construction, the scalars cancel and $\Delta R_k(\%) = 100 \hat{\beta}_k$ exactly: the percentage loss is the wealth-response coefficient, and the euro figures scale it by the simulated benchmark. The approximation is exact only under a linear tax with no cap: it prices every euro of foregone base at the 0.4% average rate although the response is concentrated where marginal rates reach 3.5%, and it ignores the income cap, which works in the opposite direction.

Because the direction of the net bias is not obvious a priori, our main quantification reprices the response taxpayer by taxpayer. For each taxpayer i we construct the counterfactual base embedding the estimated response,

$$W_i^{cf,k} = W_i^{2021} \times e^{\hat{\beta}_k}, \quad k \in \{2022, 2023\}, \quad (5)$$

where $\hat{\beta}_k$ are the difference-in-differences estimates for taxable net wealth from Section 6, recompute the full ITSGF liability on the counterfactual base, and aggregate the taxpayer-level difference in simulated liabilities with calibration weights:

$$\Delta R_k = \sum_i w_i \left[T(W_i^{2021}) - T(W_i^{cf,k}) \right]. \quad (6)$$

Both liabilities are computed on the 2021 cross-section, so the comparison isolates the estimated response while holding market valuations, saving, and sample composition fixed. The behavioural response costs €32.7m in 2022 and €40.2m in 2023 — 6.7% and 8.2% of counterfactual revenue, cumulating to roughly €73m over the two post-reform years (Table 2). Individual-level pricing matters: the repriced loss exceeds the first-order figures by about 36%, reflecting that the wealth leaving the tax base is concentrated in the top brackets, where marginal rates reach 3.5% rather than the 0.4% average, while the income cap fully shields only about 10% of effective declarants. Two caveats apply. First, the simulation is exact at the individual level, but $\hat{\beta}_k$ is common across taxpayers, so heterogeneity in responses along the wealth distribution is not well captured. Second, the 2021 declared values embed the IP valuation rules — notably book values for unlisted shares — so both R_0 and the losses are measured at fiscal rather than market values.

The behavioural cost is priced on the margin that the exemption leaves open. To gauge the fiscal weight of the exemption itself, we compare four simulated scenarios (Figure 13), all computed with the machinery described above and holding each filer’s reported balance sheet fixed at its observed values. The *actual design* applies the regional IP schedules and the ITSGF to the declared tax bases and serves as the benchmark. The second scenario adds exempt business assets, that is, assets of sole proprietorships and qualifying shareholdings in family firms, to the IP base only. Regional schedules, the joint income cap and regional rebates are then reapplied as above, so that regions with a full rebate, such as Madrid, continue to collect no IP; the ITSGF is computed as in the actual design, with the broadened IP credited against it. The third scenario adds business assets to the ITSGF base only and leaves the IP unchanged. Since the ITSGF applies only in 2022 and 2023, this scenario coincides with the actual design in earlier years. The fourth scenario broadens both bases, crediting the broadened IP against the broadened ITSGF.

Table 2 : Revenue cost of the behavioural response: Madrid

	2022	2023	Cumulative
<i>Panel A. Individual repricing</i>			
Revenue loss (€m)	32.7	40.2	72.9
Share of counterfactual revenue	6.7%	8.2%	—
<i>Panel B. First-order approximation</i>			
Revenue loss (€m)	23.9	29.6	53.4
Share of counterfactual revenue	4.9%	6.0%	—
Counterfactual revenue R_0 (€m)		490	
Effective declarants		7,423	

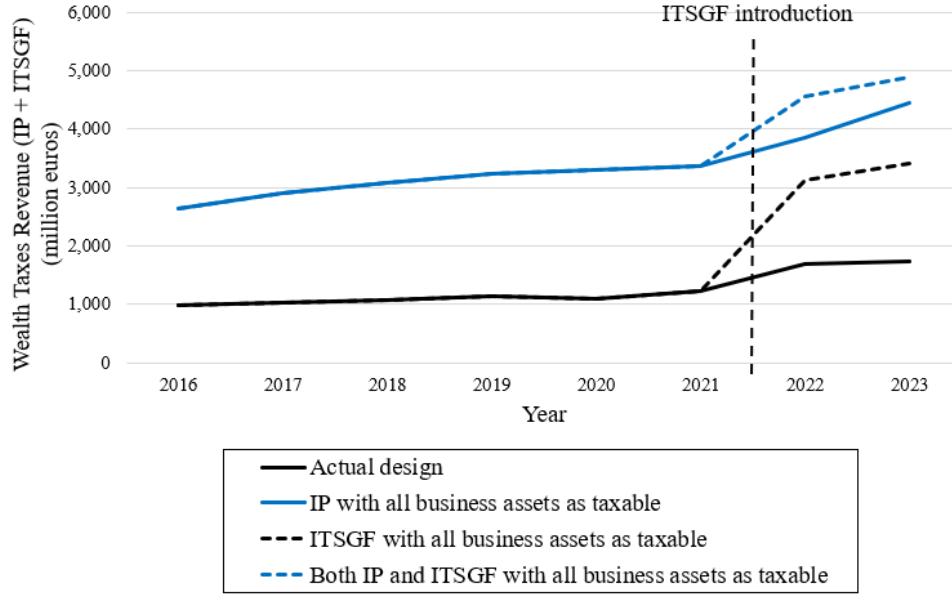
Note: Both panels price the estimated response to the ITSGF for Madrid taxpayers, $\hat{\beta}_{2022} = -0.049$ and $\hat{\beta}_{2023} = -0.060$ (Section 6), against counterfactual revenue simulated on the observed 2021 cross-section. Panel A recomputes each taxpayer's full ITSGF liability (progressive schedule, joint income-wealth cap and regional IP credit) on the counterfactual base $W_i^{2021}e^{\hat{\beta}_k}$ and aggregates the individual differences with calibration weights (equation (6)). Panel B applies the four-step approximation of equation (4), which prices the foregone base at the average effective rate; its percentage loss equals $100\hat{\beta}_k$ by construction. The cumulative column sums the two annual losses. Liabilities are measured at fiscal values as declared under IP valuation rules. Source: Authors' own calculations based on Panel de Hogares.

Under the actual design, combined IP and ITSGF revenue is approximately €1.24bn in 2021 and €1.75bn in 2023. Broadening the IP base alone raises simulated revenue to approximately €3.36bn and €4.44bn, respectively. Broadening the ITSGF base alone yields approximately €3.42bn in 2023, a gain of €1.68bn: the ITSGF reaches only net wealth above €3.7 million, but unlike the IP it also binds in regions that rebate the regional tax, where broadening the IP base adds nothing. Broadening both bases yields approximately €4.90bn in 2023. The two gains overlap, because the broadened IP is credited against the broadened ITSGF, so the combined gain of €3.15bn falls short of their sum. The additional €0.46bn over the IP-only scenario comes from taxpayers whose broadened ITSGF liability exceeds their IP liability, mainly in regions that rebate the IP.

These figures are not a revenue forecast. They ignore behavioural responses to the removal of the exemption, which would reduce revenue, and they exclude taxpayers who would become filers once business assets are taxable, which would increase it. Values are

also fiscal rather than market values, notably book values for unlisted shares. Even so, the exemption forgoes revenue almost twice as large as current wealth-tax collections. Against this stock, the behavioural flows estimated above are small, but the Madrid response shows that taxpayers actively move towards it once the tax begins to bind.

Figure 13 : Simulations: IP + ITSGF Revenue with all business assets as taxable



Note: Simulated combined IP and ITSGF revenue under four scenarios. *Actual design:* declared tax bases. *IP with all business assets as taxable:* exempt business assets added to the IP base only. *ITSGF with all business assets as taxable:* added to the ITSGF base only (2022–2023). *Both:* added to both bases. Regional schedules, the joint income cap and regional rebates are reapplied in proportion to each filer’s declaration, so full regional rebates remain in place. Reported balance sheets are held fixed and only current IP filers are included; potential new filers induced by the removal of the exemption are not.

Source: Authors’ own calculations based on Panel de Hogares.

7 Conclusions

This paper exploits the introduction of a national wealth tax in Spain to study the implementation of tax coordination in a decentralised tax system. Regional governments retain substantial autonomy over the regional IP, while the ITSGF imposes a common effective floor at the top of the wealth distribution. This institutional setting allows us to study empirically how partial coordination affects tax revenues and taxpayer behaviour while preserving decentralised tax-setting. To the best of our knowledge, this paper provides the first empirical evidence on an implemented wealth-tax coordination reform in such a setting.

Our preliminary findings show that the ITSGF substantially increased wealth-tax revenue by bringing into positive tax liability high-wealth taxpayers in regions where the regional tax had previously been eliminated or substantially reduced. Behavioural responses point to important margins that remain despite harmonisation. Mobility patterns are consistent with a weakening of Madrid's previous tax advantage among taxpayers covered by the national tax, while the introduction of the 100 percent regional rebate in Andalusia was followed by increased inflows among taxpayers below the ITSGF threshold, although the latter evidence cannot be given a clean causal interpretation. Responses within the tax base are more pronounced: taxpayers newly exposed to the ITSGF in Madrid shifted reported wealth toward exempt assets, while taxpayers benefiting from the Andalusian rebate reported higher taxable wealth and lower deductible liabilities.

These results illustrate an important feature of partial tax coordination. A national minimum tax can constrain the ability of low-tax jurisdictions to reduce the tax burden on mobile taxpayers without requiring regional governments to surrender control over their own tax. At the same time, coordination does not remove the margins that remain outside the coordinated regime. Regional tax differences can persist for taxpayers not covered by the national minimum, while taxpayers who are covered can respond through exemptions and other features of the tax base. A more comprehensive coordination scheme could address these two margins by aligning the population covered by the national tax more closely with that subject to the decentralised wealth tax and by narrowing opportunities for tax-base adjustment. In particular, extending taxation to currently exempt business assets would reduce an important margin of tax-base avoidance and, according to our simulations, could substantially increase wealth-tax revenue.

Our findings also provide insights for broader debates over taxation in decentralised fiscal systems. The Spanish case illustrates how a higher level of government can constrain tax competition while preserving substantial regional tax autonomy. This tension is not specific to wealth taxation. Similar coordination problems can arise whenever residence determines tax liability, autonomous governments retain discretion over taxes on mobile bases, and taxpayers can respond to differences across jurisdictions. In these settings, central minimum taxes or related coordination mechanisms can change both the incentives faced by taxpayers

and the strategic choices of regional governments. The Spanish experience therefore sheds light on how tax coordination can operate in federal and decentralised systems more broadly, including settings in which personal or capital income taxation is partly determined at the regional level.

The current analysis also has several limitations that motivate the next steps of the project. Most importantly, the post-reform period remains short. Future versions will extend the analysis to 2024 and subsequent years as the data become available, which will be particularly important for assessing whether the mobility and tax-base responses documented here persist over time. We also plan to translate the estimated effects into elasticities for both mobility and asset reallocation, facilitating comparison with the broader literature on behavioural responses to taxation. A further limitation is that the current mobility analysis focuses primarily on movements across Spanish regions. We therefore plan to incorporate additional information on international mobility to assess whether the reform also affected taxpayers' location choices outside Spain. Finally, we will investigate the mechanisms behind the asset-reallocation response in greater detail, including the extensive margin of participation in exempt asset categories and descriptive evidence on whether the reform was accompanied by changes in intergenerational wealth transfers, such as gifts and inheritances.

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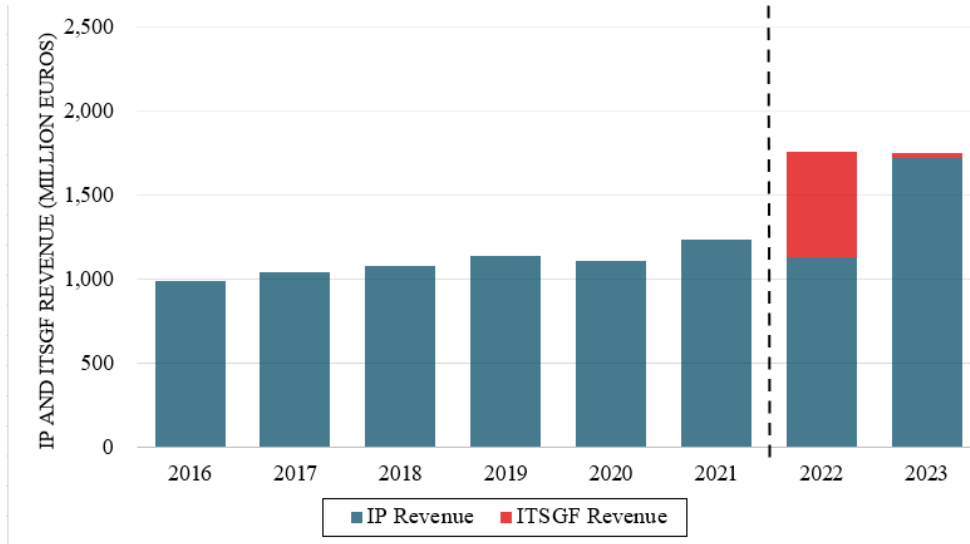
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Appendix A Simulated revenue

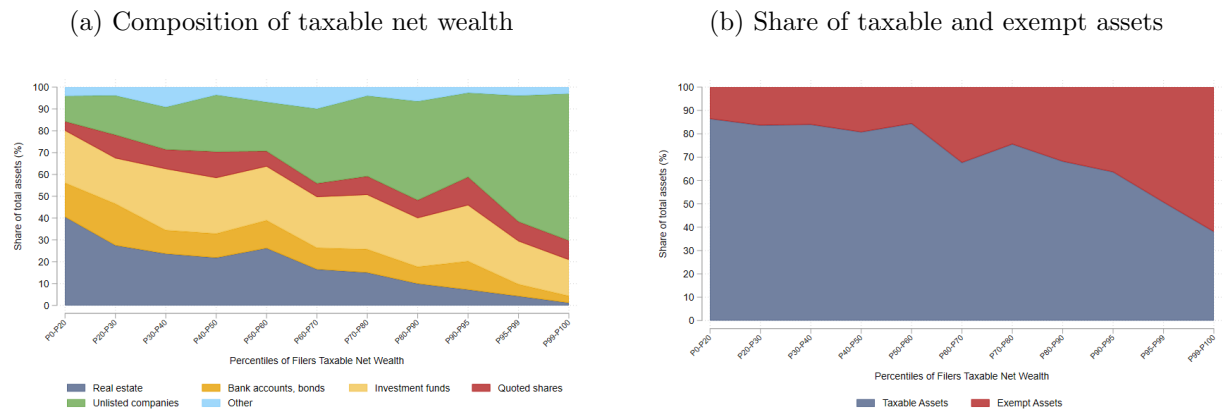
Figure A1 : Evolution of the wealth tax revenue in Spain using Panel de Hogares (2016-2023)



Source: Authors' own calculations based on Panel de Hogares.

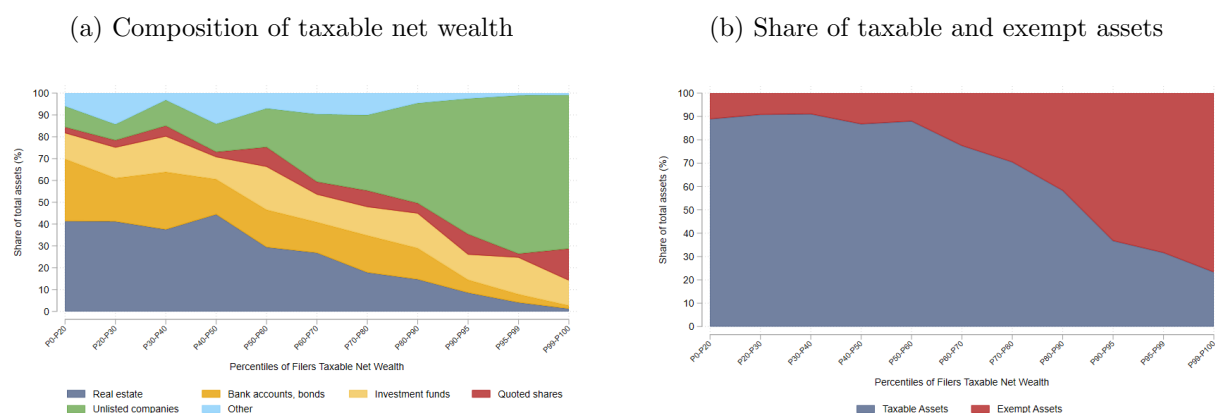
Appendix B Descriptive statistics

Figure B1 : The Composition of Taxable Net Wealth and the Share of Taxable and Exempt Assets by Wealth Group: Madrid Tax Filers, 2021



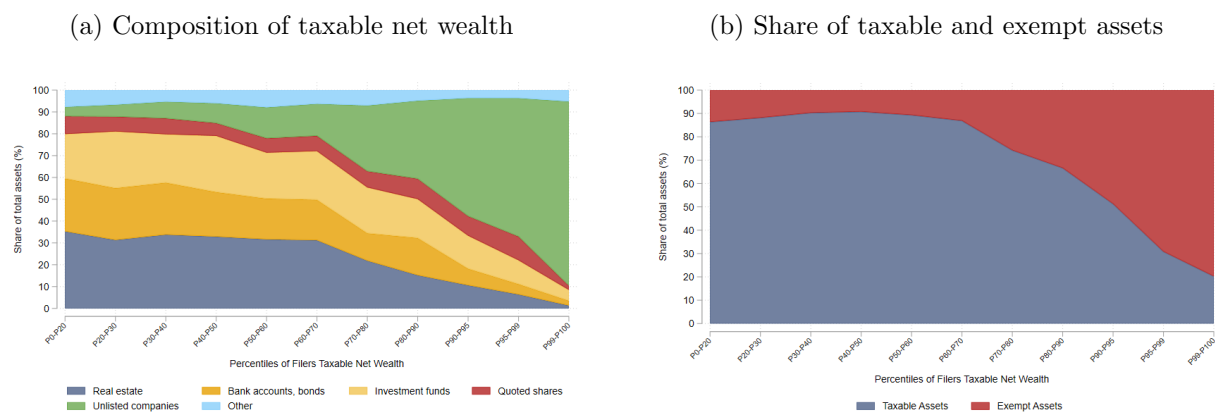
Source: Authors' own construction based on Panel de Hogares.

Figure B2 : The Composition of Taxable Net Wealth and the Share of Taxable and Exempt Assets by Wealth Group: Andalusia Tax Filers, 2021



Source: Authors' own construction based on Panel de Hogares.

Figure B3 : The Composition of Taxable Net Wealth and the Share of Taxable and Exempt Assets by Wealth Group: Control Regions Tax Filers, 2021



Source: Authors' own construction based on Panel de Hogares.

Table B1 : Descriptive Statistics: Madrid vs. Control Regions (2021)

	Taxable net wealth: 700,000 – 3.7M EUR		Taxable net wealth: above 3.7M EUR	
	Madrid 2021	Control regions 2021	Madrid 2021	Control regions 2021
<i>Sex</i>				
% of women	50%	49%	46%	46%
<i>Age</i>				
Average	61.74	65.56	62.46	66.15
Median	62	66	63	67
<i>Household type</i>				
One adult, no minors	21%	37%	27%	40%
Two adults, no minors	32%	34%	29%	35%
Three adults, no minors	28%	17%	26%	13%
Households with some minor	18%	11%	19%	12%
Household members average	2.84	2.18	2.75	2.07
<i>Total net wealth (taxable + exempt)</i>				
Mean	5,081,913	3,648,135	28,319,041	14,782,863
Median	2,870,083	1,608,173	8,873,851	7,142,068
Min.	705,275	700,483	3,701,540	3,709,209
Max.	169,989,216	3,297,224,448	4,087,629,824	372,541,280
SD	9,501,590	48,856,192	131,162,010	28,364,367
<i>Taxable net wealth</i>				
Mean	2,345,166	1,527,346	15,114,537	7,486,153
% of mean net wealth	46%	42%	53%	51%
Median	2,410,318	1,321,790	7,219,560	5,384,586
Min.	700,365	700,483	3,700,639	3,701,822
Max.	3,697,767	3,695,982	738,960,832	73,150,168
SD	789,186	695,904	32,081,427	6,626,319
<i>Exempt net wealth</i>				
Mean	2,736,748	2,120,789	13,204,504	7,296,710
% of mean net wealth	54%	58%	47%	49%
Median	0	0	0	305,463
Min.	0	0	0	0
Max.	167,707,792	3,293,682,688	3,672,439,808	350,180,992
SD	9,483,819	48,809,900	114,340,315	26,651,639
<i>Exempt business assets</i>				
Mean	2,579,571	2,088,261	10,776,117	7,224,492
% of total net wealth	51%	57%	38%	49%
Median	0	0	0	221,221
Min.	0	0	0	0
Max.	167,707,792	3,293,682,688	3,432,976,640	350,180,992
SD	9,276,184	48,808,448	88,627,625	26,662,323
<i>Disposable income</i>				
Mean	207,690	107,666	697,844	337,371
% capital as main income	46%	47%	62%	64%
% self-employment as main income	11%	14%	8%	12%
% wages as main income	31%	22%	24%	18%
% other as main income	11%	16%	5%	6%
Median	103,052	66,005	214,252	150,547
Min.	-345,315	-230,529	-1,141,295	-194,496
Max.	4,888,410	3,728,243	98,361,200	4,690,112
SD	333,969	160,871	3,005,055	592,032

Notes: Monetary values in EUR.

Source: Authors' own construction based on Panel de Hogares.

Table B2 : Descriptive Statistics: Andalusia vs. Control Regions (2021)

	Taxable net wealth: 700,000 – 3.7M EUR		Taxable net wealth: above 3.7M EUR	
	Andalusia 2021	Control regions 2021	Andalusia 2021	Control regions 2021
<i>Sex</i>				
% of women	49%	49%	43%	46%
<i>Age</i>				
Mean	63.85	65.56	65.04	66.15
Median	65	66	64	67
<i>Household type</i>				
One adult, no minors	32%	37%	40%	40%
Two adults, no minors	33%	34%	25%	35%
Three adults, no minors	21%	17%	19%	13%
Households with some minor	14%	11%	16%	12%
Household members average	2.35	2.18	2.38	2.07
<i>Total net wealth (taxable + exempt)</i>				
Mean	2,955,920	3,648,135	15,454,956	14,782,863
Median	1,720,585	1,608,173	7,222,042	7,142,068
Min.	703,839	700,483	3,705,060	3,709,209
Max.	57,675,860	3,297,224,448	170,926,896	372,541,280
SD	4,458,268	48,856,192	21,284,306	28,364,367
<i>Taxable net wealth</i>				
Mean	1,568,491	1,527,346	7,244,411	7,486,153
% of mean net wealth	53%	42%	47%	51%
Median	1,373,671	1,321,790	5,182,554	5,384,586
Min.	703,839	700,483	3,705,060	3,701,822
Max.	3,660,122	3,695,982	86,844,192	73,150,168
SD	681,900	695,904	9,176,709	6,626,319
<i>Exempt net wealth</i>				
Mean	1,387,430	2,120,789	8,210,544	7,296,710
% of mean net wealth	47%	58%	53%	49%
Median	0	0	417,206	305,463
Min.	0	0	0	0
Max.	56,618,124	3,293,682,688	98,036,568	350,180,992
SD		48,809,900	17,211,676	26,651,639
<i>Exempt business assets</i>				
Mean	1,361,978	2,088,261	8,036,659	7,224,492
% of total net wealth	46%	57%	52%	49%
Median	0	0	284,473	221,221
Min.	0	0	0	0
Max.	56,618,124	3,293,682,688	98,036,568	350,180,992
SD	4,343,091	48,808,448	17,198,818	26,662,323
<i>Disposable income</i>				
Mean	132,263	107,666	472,348	337,371
% capital as main income	44%	47%	68%	64%
% self-employment as main income	23%	14%	12%	12%
% wages as main income	20%	22%	15%	18%
% other as main income	13%	16%	5%	6%
Median	73,568	66,005	171,566	150,547
Min.	-66,851	-230,529	68	-194,496
Max.	3,926,937	3,728,243	17,622,546	4,690,112
SD	213,573	160,871	1,506,736	592,032

Notes: Monetary values in EUR.

Source: Authors' own construction based on Panel de Hogares.

Appendix C Regression tables

Table C1 : Mobility responses: event-study estimates

	Madrid (tax introduced)	Andalusia (tax removed)
<i>Treated × Region × year</i>		
2016	−0.01246 (0.054)	0.12381** (0.054)
2017	−0.00713 (0.034)	0.07647** (0.034)
2018	0.00694 (0.038)	0.15063*** (0.035)
2019	0.01956 (0.033)	0.16301*** (0.030)
2020	−0.01191 (0.020)	0.08773*** (0.019)
2022	0.04575 (0.035)	0.37531*** (0.022)
2023	0.02950 (0.043)	0.39339*** (0.031)
Joint pre-trends test, conventional p	0.205	< 0.001
Joint pre-trends test, wild bootstrap p	0.484	0.239
Observations (region×group×year)	272	272
Clusters (region×treatment)	34	34
Filers, treatment group	5,685	960
Filers, control group	960	5,685

Notes: Coefficients on the triple interaction $Treated_i \times R_r \times D_{yt}$ from equation (2), with 2021 as the omitted base year. The treated group comprises taxpayers with 2021 taxable net wealth above €3.7 million in the Madrid design (between €3.2 and €3.7 million as control) and between €3.2 and €3.7 million in the Andalusian design (above €3.7 million as control). The estimation sample comprises all seventeen autonomous communities, so filer counts refer to the national balanced panel of each wealth band in each group, unweighted. Standard errors, in parentheses, are clustered at the region-by-treatment level. The joint pre-trends test refers to the five pre-reform coefficients; the wild cluster bootstrap uses Webb weights. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Source: Authors' own calculations based on Panel de Hogares.

Table C2 : Reallocation responses: event-study estimates

	Madrid ($\geq \text{€}3.7\text{M}$)		Andalusia ($\text{€}0.7\text{--}3.7\text{M}$)	
	Taxable NW	Exempt assets	Taxable NW	Deduct. debts
Treated $\times$ 2016	0.072 (0.325)	−0.520 (0.233)	0.020 (0.473)	0.030 (0.750)
Treated $\times$ 2017	0.099 (0.325)	−0.040 (0.938)	−0.002 (0.903)	−0.080 (0.657)
Treated $\times$ 2018	0.081 (0.342)	−0.002 (0.998)	0.010 (0.643)	−0.040 (0.752)
Treated $\times$ 2019	−0.012 (0.765)	−0.059 (0.919)	0.001 (0.941)	−0.062 (0.646)
Treated $\times$ 2020	−0.005 (0.817)	−0.003 (0.995)	0.019 (0.279)	0.339 (0.381)
Treated $\times$ 2022	−0.049** (0.013)	0.436** (0.026)	0.013 (0.283)	−0.450 (0.308)
Treated $\times$ 2023	−0.060*** (0.004)	0.771** (0.013)	0.069** (0.010)	−0.871* (0.073)
Joint pre-trends (p)	0.150	0.300	0.302	0.391
Treated individuals	2,562	2,562	803	803
Control individuals	453	453	3,410	3,410

Notes: Event-study coefficients from equation (3), estimated separately for each design on the balanced 2016–2023 panel; 2021 is the omitted base year. Madrid: treated are taxpayers resident in Madrid in 2021 with taxable net wealth above €3.7 million; controls are taxpayers in the same wealth range in the five control regions. Andalusia: treated hold between €700,000 and €3.7 million; controls likewise. Outcomes in logs ($\ln(1 + y)$ for components with zeros). All regressions include individual and year fixed effects and household-type indicators, weighted by 2021 calibration weights. Wild cluster bootstrap p -values in parentheses (Webb weights, 9,999 replications), clustering by region of residence in 2021 (six clusters); the joint pre-trends row reports the bootstrap p -value of the joint test that all pre-reform coefficients are zero. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, based on bootstrap p -values.

Source: Authors' own construction based on Panel de Hogares.

Table C3 : Reallocation responses: additional outcomes

	Madrid ($\geq \text{€}3.7\text{M}$)			Andalusia ($\text{€}0.7\text{--}3.7\text{M}$)
	Non-exempt assets	Exempt business assets	Unlisted shareholdings	Non-exempt assets
Treated $\times$ 2016	0.070 (0.268)	−0.571 (0.311)	0.067 (0.776)	0.005 (0.785)
Treated $\times$ 2017	0.098 (0.217)	−0.075 (0.851)	−0.102 (0.776)	−0.009 (0.600)
Treated $\times$ 2018	0.077 (0.337)	0.115 (0.733)	0.057 (0.852)	0.000 (0.984)
Treated $\times$ 2019	−0.016 (0.669)	0.123 (0.596)	0.119 (0.637)	−0.013 (0.396)
Treated $\times$ 2020	−0.006 (0.790)	−0.090 (0.926)	−0.121 (0.923)	0.018 (0.311)
Treated $\times$ 2022	−0.041** (0.013)	0.313 (0.100)	0.369 (0.167)	0.007 (0.417)
Treated $\times$ 2023	−0.050* (0.056)	0.412 (0.122)	0.521 (0.128)	0.043*** (0.006)
Joint pre-trends (p)	0.667	0.833	0.443	0.408
Treated individuals	2,562	2,562	2,562	803
Control individuals	453	453	453	3,410

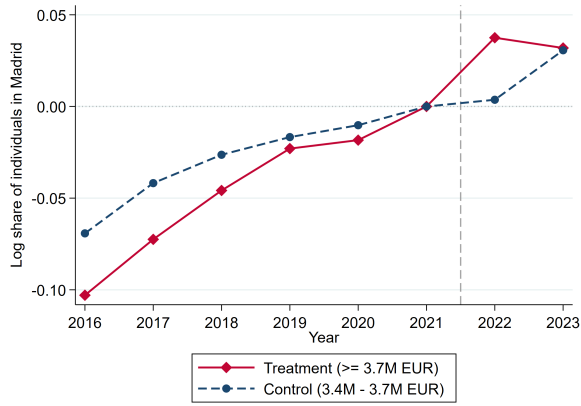
Notes: Event-study coefficients from equation (3), estimated as in Table C2; 2021 is the omitted base year. Madrid columns compare treated taxpayers (2021 taxable net wealth above €3.7 million, resident in Madrid) with taxpayers in the same wealth range in the five control regions; the Andalusia column compares treated taxpayers (€700,000–€3.7 million, resident in Andalusia) with taxpayers in the same range in the control regions. Outcomes in $\ln(1 + y)$. Since most treated taxpayers report none of a given exempt component at baseline, coefficient magnitudes for exempt business assets and unlisted shareholdings are not interpretable as percentage effects (Chen and Roth, 2024) and are reported as evidence on the direction of the response. All regressions include individual and year fixed effects and household-type indicators, weighted by 2021 calibration weights. Wild cluster bootstrap p -values in parentheses (Webb weights, 9,999 replications), clustering by region of residence in 2021 (six clusters); the joint pre-trends row reports the bootstrap p -value of the joint test that all pre-reform coefficients are zero. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, based on bootstrap p -values.

Source: Authors' own construction based on Panel de Hogares.

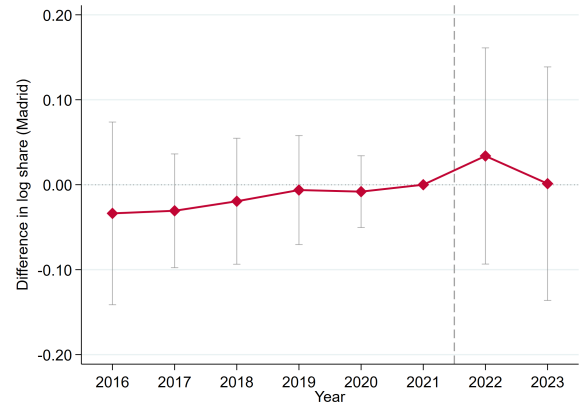
Appendix D Additional results in the mobility analysis

Figure D1 : Effect of the ITSGF on the log share of taxpayers residing in Madrid

(a) Treatment ($\geq \text{€}3.7\text{M}$) and control ($\text{€}3.4\text{--}3.7\text{M}$)



(b) Difference (treatment – control)

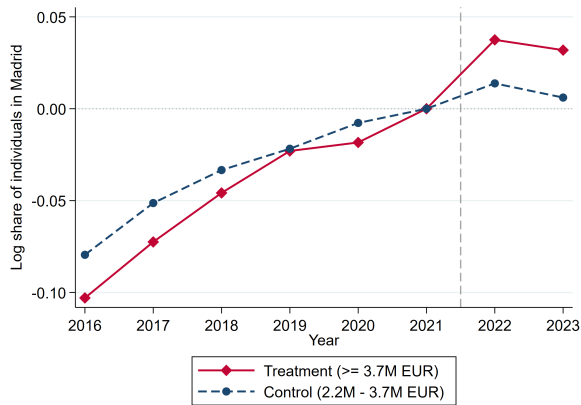


Note: Event-study estimates of the effect of the ITSGF on the log share of taxpayers residing in Madrid. Panel (a) plots the treatment and control groups separately; panel (b) plots the coefficients on the triple interaction in equation (2). The dashed line marks 2021, the year prior to the reform. Standard errors are clustered at the region-by-treatment level; 95% confidence intervals. Balanced panel, 2016–2023.

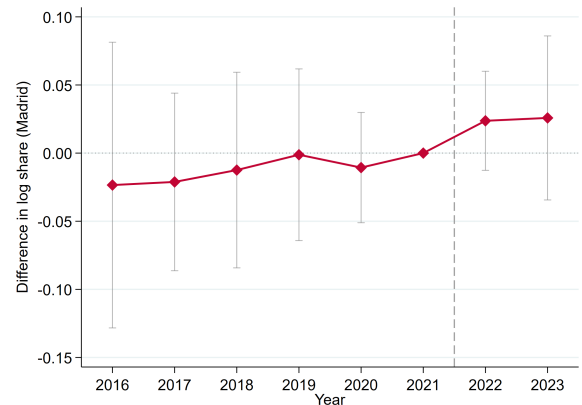
Source: Authors' own calculations.

Figure D2 : Effect of the ITSGF on the log share of taxpayers residing in Madrid

(a) Treatment ($\geq \text{€}3.7\text{M}$) and control ($\text{€}2.2\text{--}3.7\text{M}$)



(b) Difference (treatment – control)

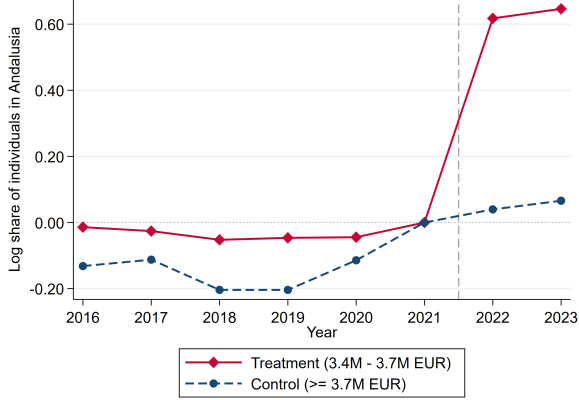


Note: Event-study estimates of the effect of the ITSGF on the log share of taxpayers residing in Madrid. Panel (a) plots the treatment and control groups separately; panel (b) plots the coefficients on the triple interaction in equation (2). The dashed line marks 2021, the year prior to the reform. Standard errors are clustered at the region-by-treatment level; 95% confidence intervals. Balanced panel, 2016–2023.

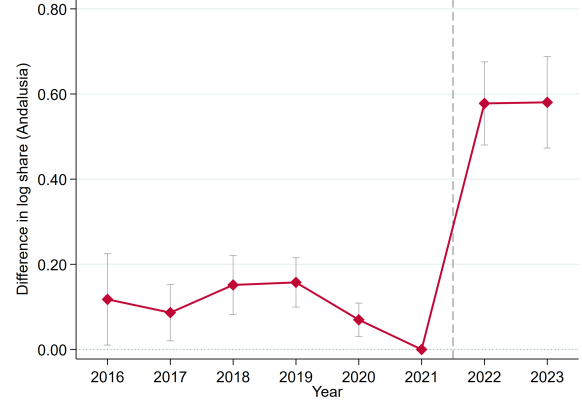
Source: Authors' own calculations.

Figure D3 : Effect of the reform on the log share of taxpayers residing in Andalusia

(a) Treatment (€3.4–3.7M) and control ($\geq$ €3.7M)



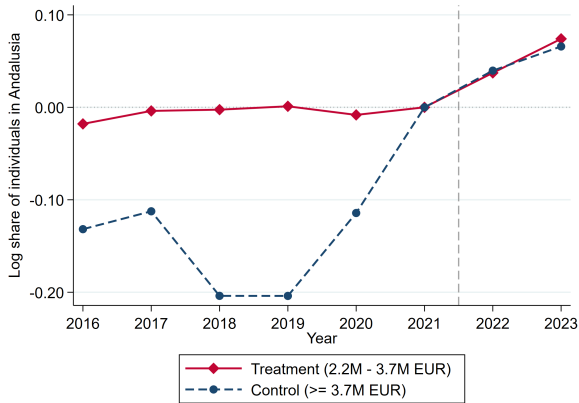
(b) Difference (treatment – control)



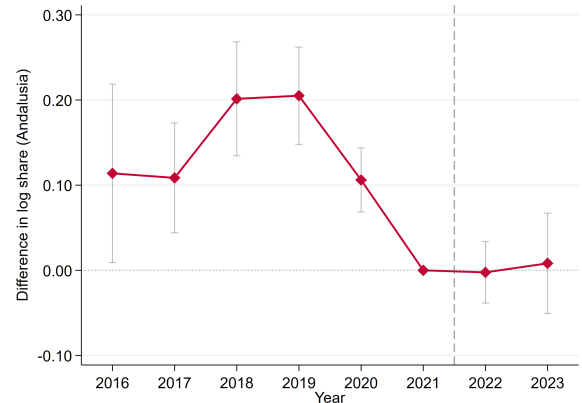
Note: Event-study estimates of the effect of the 2022 regional rebate on the log share of taxpayers residing in Andalusia. Panel (a) plots the treatment and control groups separately; panel (b) plots the coefficients on the triple interaction in equation (2). The dashed line marks 2021, the year prior to the reform. Standard errors are clustered at the region-by-treatment level; 95% confidence intervals. Balanced panel, 2016–2023.
Source: Authors' own calculations.

Figure D4 : Effect of the reform on the log share of taxpayers residing in Andalusia

(a) Treatment (€2.2–3.7M) and control ($\geq$ €3.7M)



(b) Difference (treatment – control)



Note: Event-study estimates of the effect of the 2022 regional rebate on the log share of taxpayers residing in Andalusia. Panel (a) plots the treatment and control groups separately; panel (b) plots the coefficients on the triple interaction in equation (2). The dashed line marks 2021, the year prior to the reform. Standard errors are clustered at the region-by-treatment level; 95% confidence intervals. Balanced panel, 2016–2023.
Source: Authors' own calculations.

Appendix E Additional results in the asset reallocation analysis

Figure E1 : Event-study estimates: non-exempt assets, Madrid vs control regions

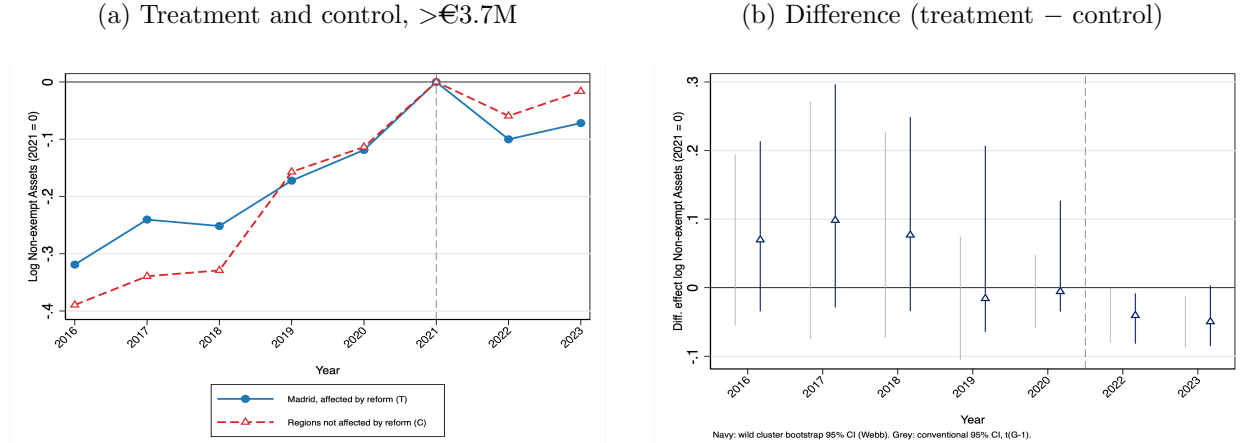
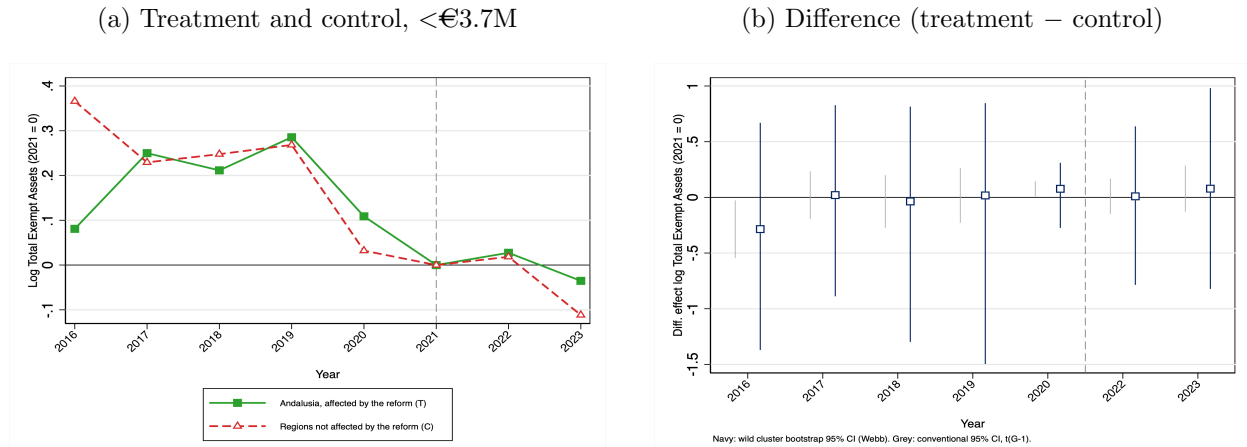


Figure E2 : Event-study estimates: exempt assets, Andalusia vs control regions



Appendix F Robustness in the asset reallocation analysis

F.1 Placebo groups

Figure F1 : Event-study estimates: taxable net wealth — Madrid vs control regions

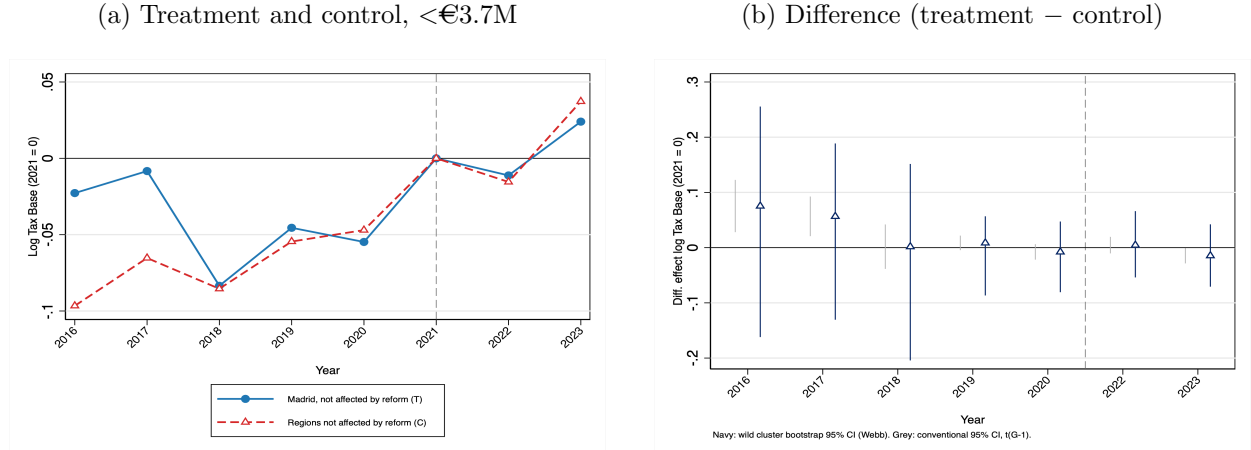


Figure F2 : Event-study estimates: exempt assets — Madrid vs control regions

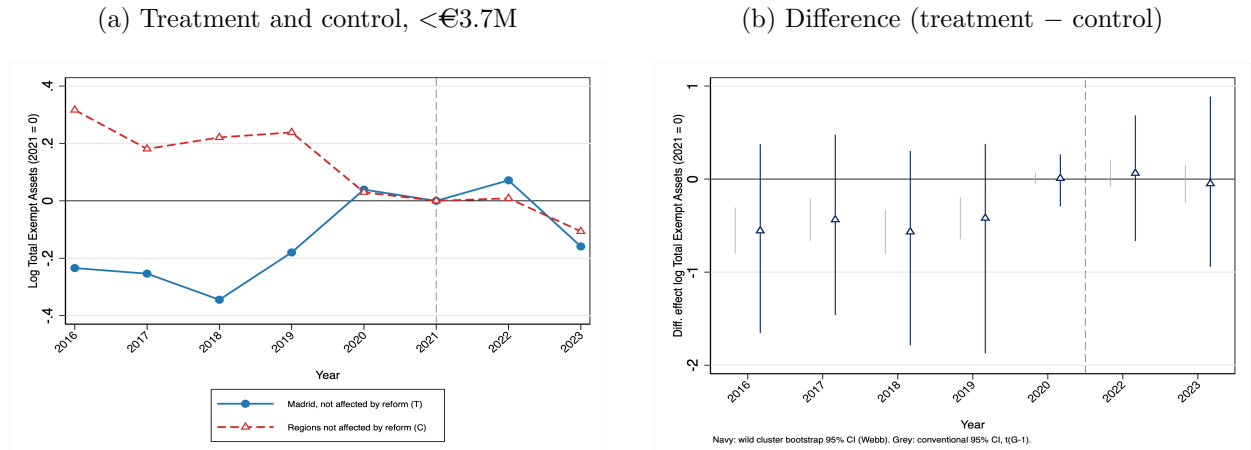


Figure F3 : Event-study estimates: taxable net wealth — Andalusia vs control regions

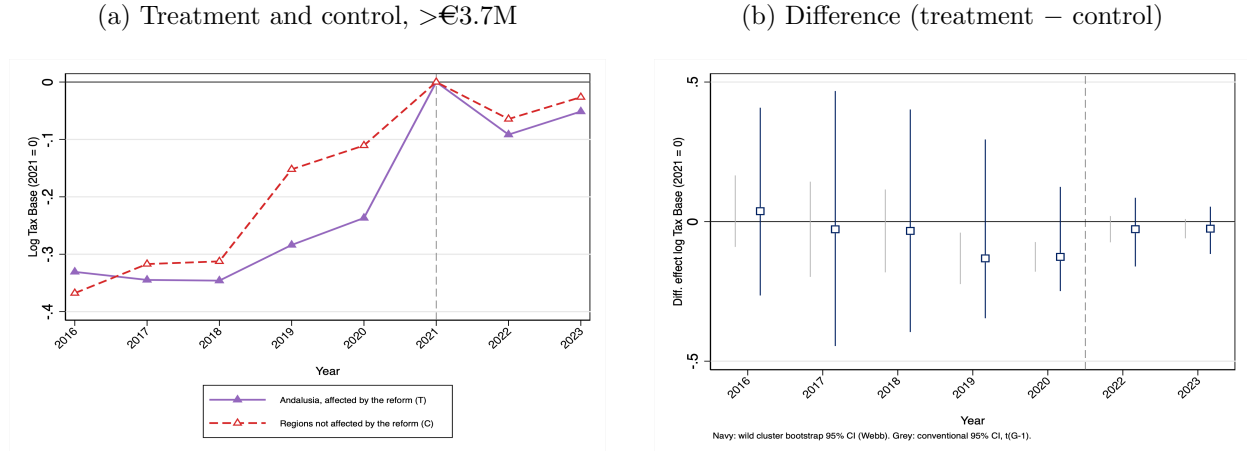
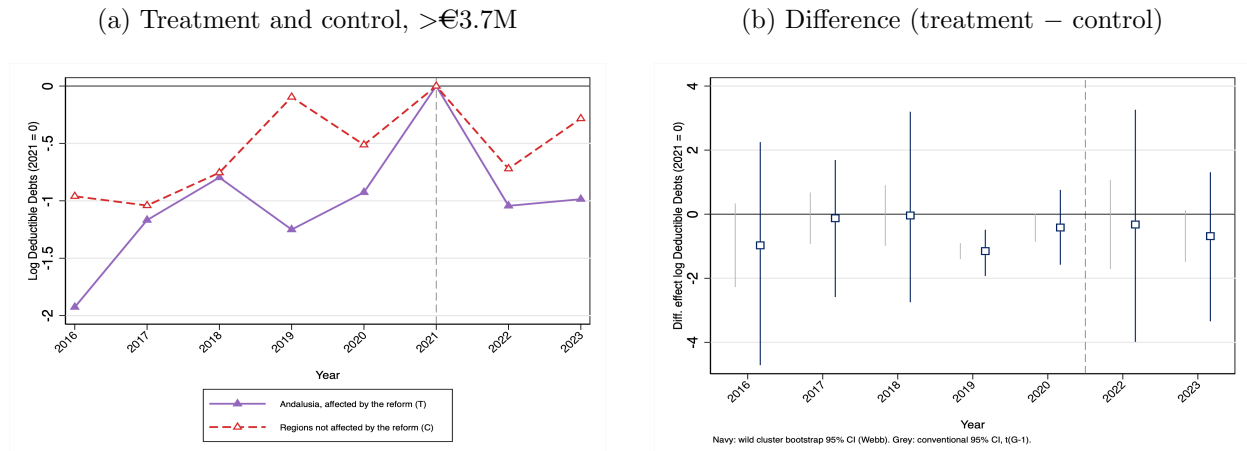


Figure F4 : Event-study estimates: deductible debts — Andalusia vs control regions



F.2 Individual clustered results

Figure F5 : Event-study estimates: taxable net wealth — Madrid vs control regions

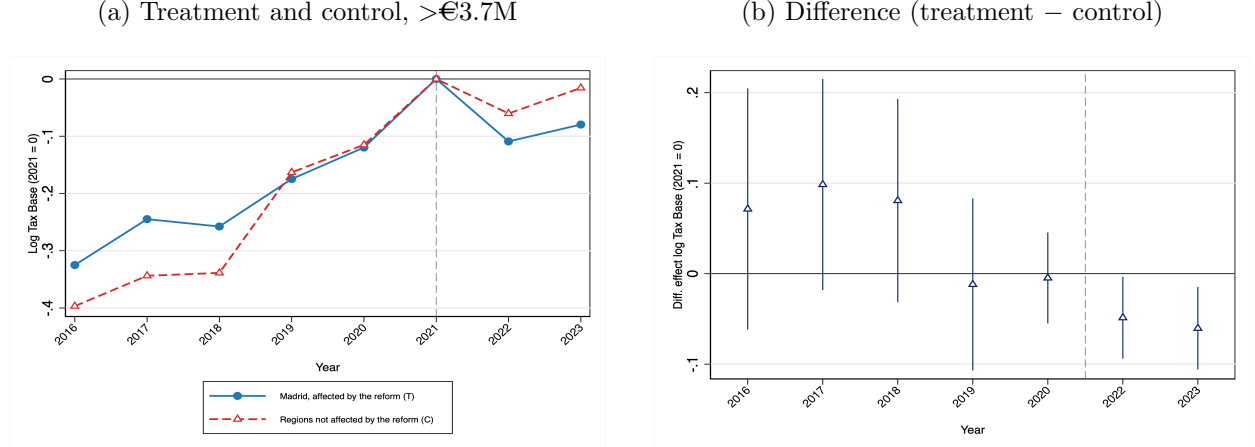


Figure F6 : Event-study estimates: exempt assets — Madrid vs control regions

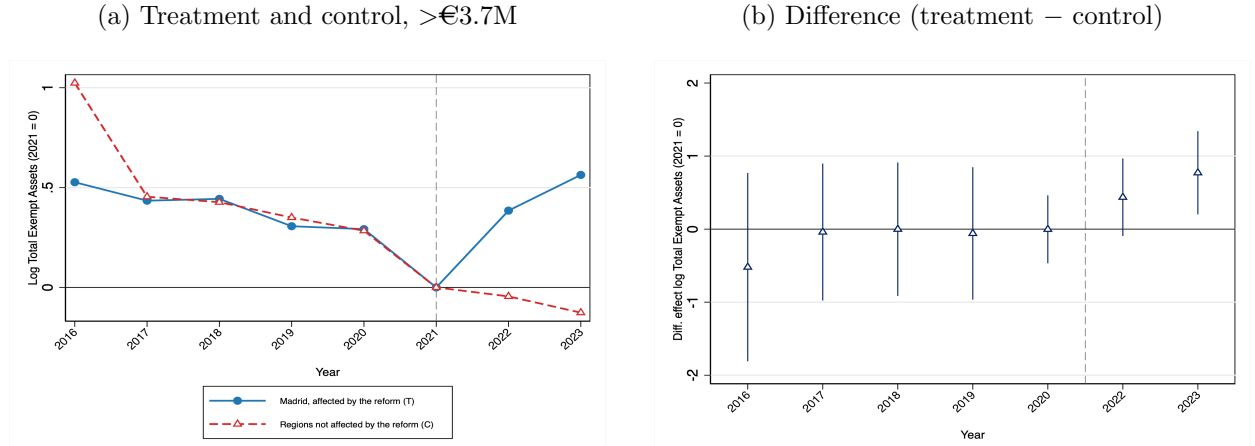
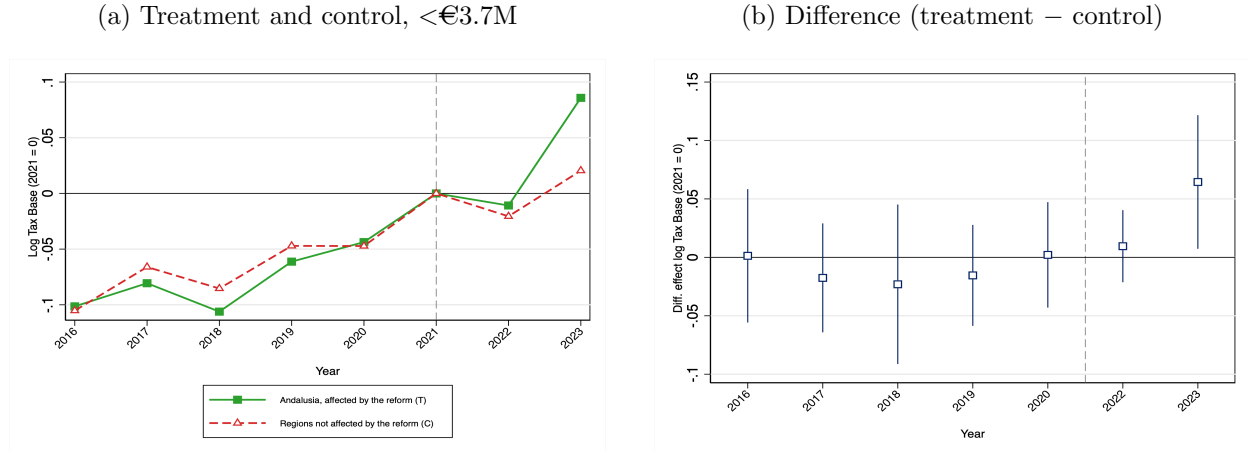


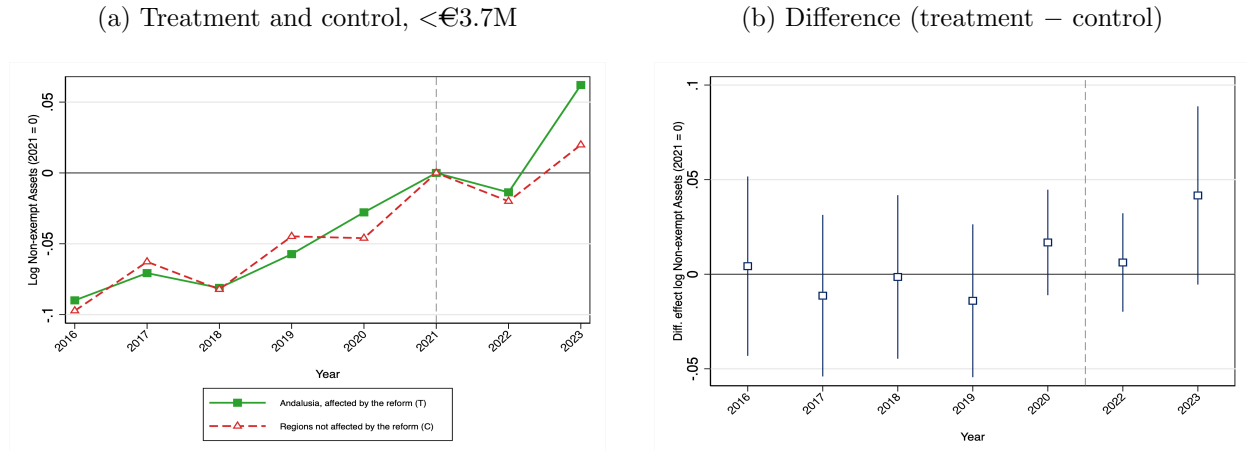
Figure F7 : Event-study estimates: taxable net wealth — Andalusia vs control regions



Note: This figure reproduces the event-study estimates of the effect of the 2022 regional reform on taxable net wealth in Andalusia from Figure 10, clustering standard errors at the individual level rather than the regional level. The left panel plots the treatment (net wealth between €700,000 and €3.7 million) and control groups separately, with log taxable net wealth normalised to zero in 2021; the right panel plots their difference. The vertical dashed line marks 2021, the year prior to the reform. Individuals are required to appear in the data in every year between 2016 and 2023 to be included in the regression sample.

Source: Authors' own construction.

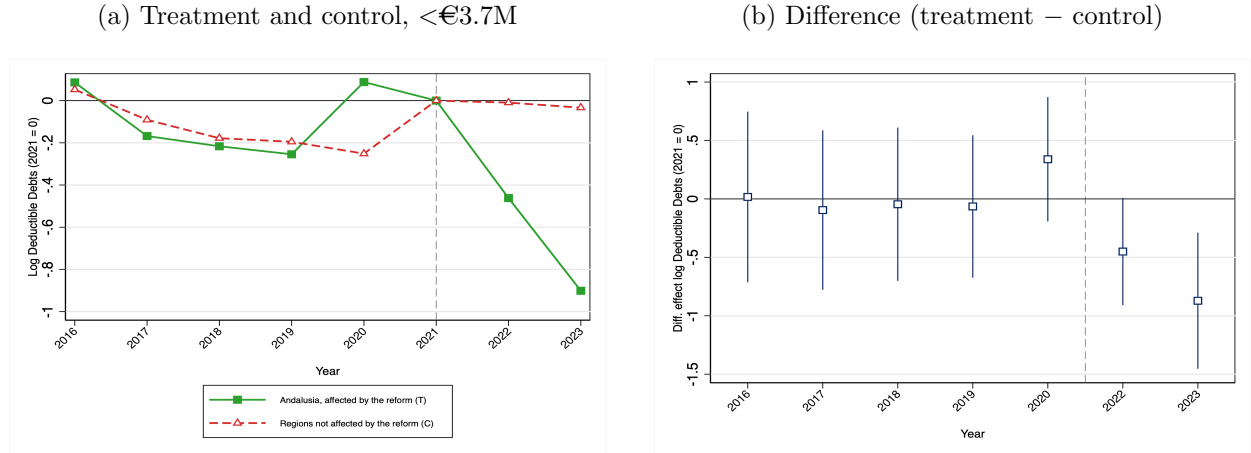
Figure F8 : Event-study estimates: non-exempt assets — Andalusia vs control regions



Note: This figure reproduces the event-study estimates of the effect of the 2022 regional reform on non-exempt assets in Andalusia from Figure 11, clustering standard errors at the individual level rather than the regional level. The left panel plots the treatment (net wealth between €700,000 and €3.7 million) and control groups separately, with log non-exempt assets normalised to zero in 2021; the right panel plots their difference. The vertical dashed line marks 2021, the year prior to the reform. Individuals are required to appear in the data in every year between 2016 and 2023 to be included in the regression sample.

Source: Authors' own construction.

Figure F9 : Event-study estimates: deductible debts — Andalusia vs control regions

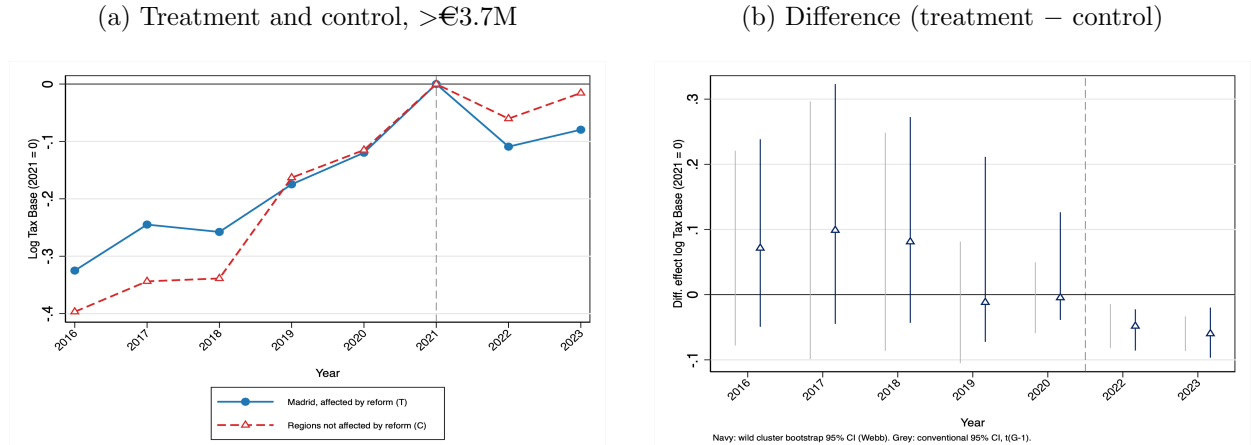


Note: This figure reproduces the event-study estimates of the effect of the 2022 regional reform on deductible debts in Andalusia from Figure 12, clustering standard errors at the individual level rather than the regional level. The left panel plots the treatment (net wealth between €700,000 and €3.7 million) and control groups separately, with log deductible debts normalised to zero in 2021; the right panel plots their difference. The vertical dashed line marks 2021, the year prior to the reform. Individuals are required to appear in the data in every year between 2016 and 2023 to be included in the regression sample.

Source: Authors' own construction.

F.3 Dropping the top 1%

Figure F10 : Event-study estimates: taxable net wealth — Madrid vs control regions



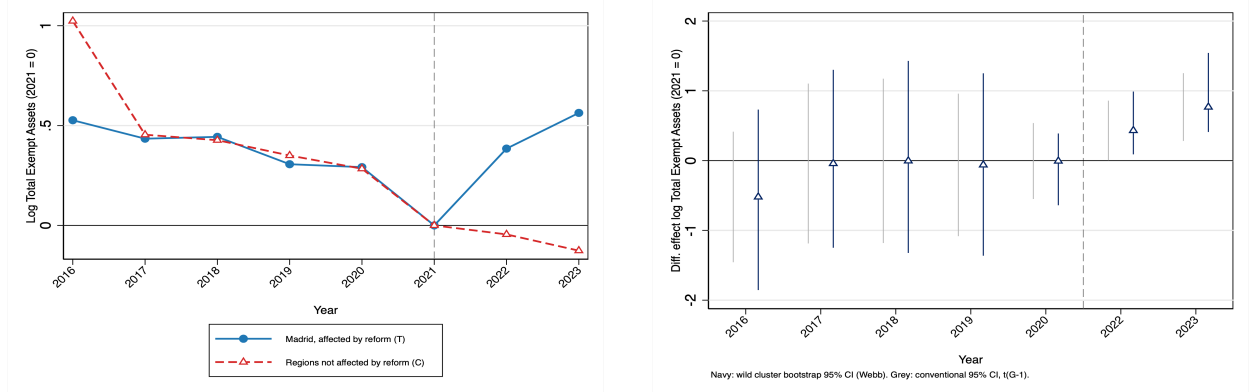
Note: This figure reproduces the event-study estimates of the effect of the ITSGF on taxable net wealth in Madrid from Figure 8, excluding the top 1% of taxpayers by net wealth from the estimation sample. The left panel plots the treatment (net wealth above €3.7 million) and control groups separately, with log taxable net wealth normalised to zero in 2021; the right panel plots their difference. The vertical dashed line marks 2021, the year prior to the ITSGF's introduction. Standard errors are clustered at the regional level, with inference based on a wild bootstrap given the small number of clusters. Individuals are required to appear in the data in every year between 2016 and 2023 to be included in the regression sample.

Source: Authors' own construction.

Figure F11 : Event-study estimates: exempt assets — Madrid vs control regions

(a) Treatment and control, $>€3.7M$

(b) Difference (treatment – control)



Note: This figure reproduces the event-study estimates of the effect of the ITSGF on exempt assets in Madrid from Figure 9, excluding the top 1% of taxpayers by net wealth from the estimation sample. The left panel plots the treatment (net wealth above €3.7 million) and control groups separately, with log exempt assets normalised to zero in 2021; the right panel plots their difference. The vertical dashed line marks 2021, the year prior to the ITSGF's introduction. Standard errors are clustered at the regional level, with inference based on a wild bootstrap given the small number of clusters. Individuals are required to appear in the data in every year between 2016 and 2023 to be included in the regression sample.

Source: Authors' own construction.