The Effects of Inheritance and Gift Taxation on Upward Wealth Mobility at the Bottom: Lessons from Spain

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Abstract

This paper studies the impact of inheritance and gift (IG) taxation on intragenerational wealth mobility. To do so, I exploit rich variation in tax rates across Spanish regions resulting from the decentralization of this tax to regional governments. Using household panel data from the Spanish Survey of Household Finances, I document that higher inheritance taxes significantly and persistently reduce heirs' wealth mobility at the lower part of the net wealth distribution. These wealth mobility responses to higher taxes are explained by less wealthy heirs decreasing their financial wealth and increasing their personal credit debt. Liquidity constraints and restricted access to financial instruments help rationalize the rise in personal credit debt at the time of the tax payment. Illiquidity of inheritances helps explain the lasting negative effects of taxes on bottom-wealth mobility, as delays in selling inherited real estate amplify the negative effects of taxes on personal credit debt and financial wealth of bottom-wealth heirs.

Keywords: inheritance and gift taxation, net wealth, wealth mobility
JEL codes: G51, H24, H73, D63

1 Introduction

At the heart of the ongoing debate on the sharp rise in wealth inequality is the use of inheritance and inter-vivos gift (IG, hereafter) taxation as one of the main available policy tools to redistribute wealth and guarantee equal opportunities (OECD, 2021; Piketty et al., 2013). This is an important issue since, by 2021, IG taxes are still levied in 24 out of the 36 OECD countries.[1] Yet, empirical research on this topic is very limited as isolating the causal impact of IG taxation on wealth distributional outcomes is challenging due to identification and measurement issues. First, inheritance and gift tax reforms that could be used in a quasi-experimental setting are rare. Second, even if they have occurred, rich administrative or survey data containing detailed information on heirs' and donees' wealth has often been unavailable to researchers. These empirical challenges are also aggravated by a stark theoretical ambiguity about the impact of wealth transfer taxation on wealth distributional outcomes. For example, the quantitative macroeconomic literature examining the distributional effects of estate taxation in the U.S. finds that the effects of suppressing this form of bequest taxation range from mild to substantial, depending on specific modeling assumptions. For instance, Cagetti and De Nardi (2009); Castaneda et al. (2003) find negligible effects of abolishing estate taxation on wealth inequality and mobility, while Benhabib et al. (2011) finds rather sizable effects. In addition, recent developments in the theoretical literature on optimal bequest taxation also argue in favor of a positive optimal inheritance tax rates but again its magnitude depends explicitly on the modeling assumptions (Brunner and Pech, 2012; Piketty and Saez, 2013).[2]

In this paper, I study the wealth mobility consequences of the Spanish IG taxation. The Spanish setting serves as an ideal testing ground as it allows me to tackle the above-mentioned identification and measurement challenges. First, it provides rich survey household panel data on wealth from 2002 to 2018. The Spanish Survey of Household Finances (or EFF for its acronym in Spanish) contains detailed information on the wealth and debt of Spanish households, including information on pre-tax inheritances and inter-vivos gifts amounts and their asset composition. Second, Spain offers promising quasi-experimental variation in effective IG tax rates among its regions for any tax bracket.

The Spanish IG tax is designed at the national level. The law contemplates a progres-

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[1]See data: OECD Report 2021

[2]Piketty and Saez (2013) show that the optimal inheritance tax rate should be positive and large if the elasticity of bequests to the tax rate is low, bequest concentration is high, and society cares mostly about those receiving small bequests. Brunner and Pech (2012) show the introduction of the inheritance tax can have an ambiguous effect on welfare depending on whether the external effect related to altruism is accounted for in the social objective.

sive tax schedule with 16 brackets and tax rates ranging from 7.65% to 34%. In 1996 the administration and regulation of this tax were decentralized to regional governments, which were awarded regulatory power to introduce tax credits and deductions for any tax bracket as well as to modify the marginal tax schedule at their will. Regions started to exercise this right in the mid-2000s resulting in large regional cross-bracket variation in the effective tax rates due to differences in (i) the timing of the tax reforms, (ii) the number of tax brackets affected and (iii) the magnitude of the tax discounts introduced. I collect information on all regional IG tax reforms between 2002-2018 relying on different official data sources. Most of these tax reforms took the form of tax credits and deductions that targeted a tax burden relief for close heirs and donees (i.e., spouses, descendants older than 21, and ascendants) and were applicable to any asset included in the tax base. With this novel information, I construct a tax simulator for inheritance and gift taxes for all Spanish regions. Then, I apply this tax simulator to the inheritance and gifts reported by households in the EFF survey and leverage the regional variation in tax payments across tax brackets and time to estimate the effects of IG taxation on wealth mobility and household wealth and debt.

I estimate the average treatment effect of IG tax changes, as well as their dynamics, using an event-study specification. For my empirical strategy, I compare changes in wealth mobility and wealth and debt holdings of those households that receive an inheritance or gift (before and after they receive it) across different regions (i.e., different tax rates). In the absence of a pre-trend, the identifying assumption is that there is no systematic regional factor driving both IG tax rates and outcome variables. The most relevant threat to identification is that local economic shocks at the regional level simultaneously determine the IG tax setting and household wealth outcomes. In this respect, I show that IG tax changes do not react to past regional economic conditions or the state of regional public finances but only to the political orientation of the regional government. Further, the ideology of the party in power happens to be uncorrelated with systematic differences in economic and fiscal performance across regions. This mitigates the concerns about biases in the estimates of the treatment effects due to these confounding factors. In addition, I argue that IG tax-induced regional mobility should not play a major role in this setting due to the frequency of the tax changes and the specific design of the tax, as inheritance taxes are paid in the region of residence of the deceased person during the last 5 years and gift taxes are paid where the assets being transferred are located.

By comparing heirs and donees who pay taxes in different regions, I find that higher inheritance taxes have a negative impact on net wealth mobility, but only at the bottom of the wealth distribution. Specifically, a one percentage point increase in inheritance tax rate

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makes households below the 50th net wealth percentiles between 0.01 to 0.33 percent less likely to improve their position in the net wealth distribution. For heirs at the very bottom of the wealth distribution (i.e those at the 10th net wealth percentile), these point estimates represent a wealth mobility decrease of 36 to 77 percent in the years after the tax payment relative to their average pre-inheritance wealth mobility. Interestingly, this negative effect is persistent, remaining statistically significant during 3 to 6 years after the inheritance receipt for heirs at the first two percentiles. Instead, gift taxes on cash transfers do not seem to affect differently wealth mobility at any part of the wealth distribution. Next, I investigate the empirical drivers behind these wealth mobility dynamics more deeply by studying debt and gross wealth responses to inheritance taxation for different groups of households depending on their position within the wealth distribution before the tax payment. I provide evidence that a one percentage point increase in the inheritance tax rate decreases heirs' gross wealth by 9 to 12 percent in the years after the tax payment for households at the bottom of the wealth distribution. This negative effect of taxes on gross wealth is mostly driven by a reduction in their financial wealth, particularly in liquid assets, that goes in parallel with a rise in the non-mortgage debt-to-wealth ratio by 3.2 and 4.7 percentage points in the years after the tax payment. In contrast, higher taxes do not seem to affect differently gross wealth and debt of heirs and donees placed above the 50th net wealth percentile, besides a short-lived negative effect on financial wealth for middle-wealth households. Accordingly, this mechanism uncovers an important link between inheritance taxes and household debt in the presence of liquidity constraints which the literature has so far overlooked and connects it with wealth mobility outcomes.

These results altogether suggest that the negative effects of inheritance taxes on bottom-wealth mobility are mostly explained by lower financial wealth and higher debt of these households. I argue that liquidity constraints and restricted access to financial instruments are relevant factors in explaining the positive effect of inheritance taxes on personal credit debt at the time of the tax payment. Despite getting smaller inheritances in absolute terms, less-wealthy heirs in Spain receive larger inheritances relative to their stock of wealth than wealthier ones. More concretely, households below the 40th net wealth percentile in Spain receive on average inheritances as large as 6 times their gross wealth (or 86 times their liquid assets) at the time of their receipt.[3] The higher relative size of inheritances with respect to households' stock of liquid wealth at the left tail of the distribution is explained by bottom-wealth households inheriting a large proportion of illiquid assets in form of real estate property. This particular feature of Spain[4] increases the tax burden of the bottom-

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[3]These averages are computed using a sample of EFF households with positive net wealth.

[4]Home ownership rate for households below the 20th net wealth percentile in Spain amounts to almost 30%. This is a sizable rate compared to the one in France or Germany for bottom-wealth households, which

wealth households disproportionately, even after taking into account the corresponding tax discounts for real estate assets contemplated in the law. The liquidity constraints faced by bottom-wealth households at the time of the tax payment are reinforced by several Spanish IG tax law mandates, which limit heirs' access to different financial instruments and leave them with few options besides relying on personal credit debt to pay the corresponding tax liabilities. First, heirs are required to pay taxes in the next 6 months following the death event to gain ownership of the deceased person's estate, which becomes frozen by the bank system and public registry on the same day of the death (including bank accounts and deposits). Heirs can ask for a tax payment moratorium and/or installment but this comes with an additional cost and does not grant access to the deceased person's estate until the tax payment is completed. Second, the Spanish bank system does not allow heirs to put the yet-to-be-inherited real estate assets as collateral for loans, which reduces the number of debt instruments available for liquidity-constraint households who might need extra cash to pay tax liabilities when subject to higher levels of taxation.

Although the singularities of the Spanish IG tax system help rationalize the rise of personal credit debt of less-wealth heirs who might face liquidity constraints at the time of the tax payment, it is less obvious why the detrimental effects of inheritance taxes on bottom-wealth mobility and personal credit debt persist over time. In combination with this channel, I provide evidence that the illiquidity of inheritances and delays in selling inherited real estate property help explain the persistence of the negative effect of taxes on bottom-wealth mobility. To do so, I leverage regional variation in tax-induced restrictions to sell the inherited dwelling. In Spain, the inheritance tax law allows heirs to benefit from generous tax credits applicable to the deceased's main dwelling under the condition that inherited property must not be sold for a certain amount of years. Heirs are allowed to sell the property before but they would lose the corresponding fiscal benefits in favor of the Treasury, which can result in a considerable cash disbursement. Although the default law establishes a 10-year period, regions have reduced this time restriction since the mid-2000s resulting in plausibly exogenous variation in the delay to sell real estate property due to differences in (i) the timing and (ii) the magnitude of these time limit reductions. I show that the effects of inheritance taxes on less wealthy heirs' personal credit debt and financial wealth are stronger in regions with longer restrictions to sell inherited real estate without cost. These results suggest that delays in selling illiquid inherited assets might prevent households at the bottom from deleveraging and improving their net wealth position sooner.

Related literature. This paper contributes to several strands of the literature. First,

is around 2% and 7% respectively. These averages have been obtained from the 2014 wave of the Household Finance Consumer Survey of the Euro area.

it speaks to the scant literature exploring the empirical effects of inheritances on wealth inequality using rich household data (Elinder et al., 2018; Nekoei and Seim, 2022). These two studies find that inheritances reduce wealth inequality upon receipt as heirs at the bottom of the wealth distribution receive larger inheritances relative to their pre-inheritance wealth than wealthier heirs do. In light of this empirical evidence, Elinder et al. (2018) also study the role of inheritance taxation by exploiting the Swedish tax repeal in 2005 finding that taxing inheritances dampens the equalizing effect that inheritances have at the baseline. In turn, Nekoei and Seim (2022) discuss the potential role of inheritance taxation in Sweden by simulating different tax changes (expected vs unexpected) and tax revenue redistribution schemes. These authors highlight that the direct mechanical effect of inheritance taxation, which increases wealth inequality, is of first order compared to the behavioral effects. Their results suggest that taxation can play a role in mitigating the rise of wealth inequality by taxing only wealthy heirs who deplete their bequests at a slower pace due to higher returns on inherited wealth. Different from these studies whose primary focus is to investigate the role of inheritances in shaping wealth inequality, I provide direct evidence on the effects of inheritance taxation on wealth and debt outcomes at the household level as well as on wealth mobility by leveraging a novel and more compelling source of variation in inheritance rates across Spanish regions. By doing so, I shed light on a yet unexplored empirical channel that associates the debt of less wealthy heirs with higher inheritance taxation, highlighting the importance of liquidity constraints and the asset composition of inheritances in deterring net wealth mobility at the bottom. In line with previous results, my findings also underscore the distribution of wealth among the descendants as a key factor in explaining the negative effect of the inheritance taxes on bottom-wealth mobility.

Next, this paper is also related to the empirical research exploring the effects of wealth taxation on wealth (Jakobsen et al., 2020; Ring, 2020) and reported wealth (Agrawal et al., 2020; Brülhart et al., 2019; Seim, 2017). In a similar spirit as Agrawal et al. (2020); Brülhart et al. (2019) who leverage regional variation in wealth taxes in Spain and Switzerland to study how reported wealth responds to changes in wealth tax rates, this paper also exploits regional cross-bracket differences in effective IG tax rates in Spain. However, rather than looking at wealth taxation which affects a very small share of households concentrated at the right tail of the wealth distribution (0.5% of the adult population in 2015), my contribution here is to pay attention to the effect of IG taxes, which is another form of wealth taxation that affects a broader group of the population (3.1% of the adult population in 2015). Finally, this paper is further related to the empirical work studying the effects of taxation on household debt (Gruber et al., 2021; Poterba and Sinai, 2008). These studies have mainly explored the effects of property taxes or housing-related fiscal policy changes on household debt. Unlike

them, I study the effects of IG taxation rather than property taxation and relate household debt to wealth mobility patterns across the wealth distribution.

The rest of the paper is organized as follows. Section 2 introduces the Spanish inheritance and gift tax system and describes the methodology used to construct effective regional tax schedules. Section 3 describes the household survey data used in the paper. Section 4 presents the empirical strategy used to study the effects of inheritance and gift taxes on wealth mobility and net wealth of heirs and donees. Section 5 presents the empirical results and discusses them. Section 6 presents additional robustness checks exercises and Section 7 concludes. An Appendix gathers further Tables and Figures briefly discussed throughout the paper.

2 Institutional Setting

The Spanish IG tax dates back to the 18th century when it was first introduced in the tax system during the reign of Charles IV. It suffered several modifications during the 19th and 20th centuries until it became finally regulated in 1987 (Law 29/1987) as part of one the major tax system reforms undertaken after the arrival of democracy in Spain. All regions are subject to this law except for the Basque Country and Navarre (the *Foral* regions) which, due to their special fiscal status, enjoy regulatory power to design most taxes, including the IG tax.[5]

Different from other countries, Spanish law regulates inheritances and gift taxes jointly. The Spanish IG tax is levied on heirs and donees and depends on their degree of kinship with the deceased or donor, respectively. The law distinguishes four groups of heirs/donees: (i) descendants younger than 21, (ii) descendants older than 21, spouses and ascendants, (iii) siblings, stepchildren, nephews/nieces, uncles/aunts, and (iv) more distant relatives and non-relatives. Heirs' tax base is defined as the sum of the individual portion inherited and life insurance benefits derived from the deceased's bequests[6] while donees' tax base is defined as the sum of assets transferred *inter vivos* by an alive donor. The net tax base is calculated after applying any eligible tax deductions. These depend on the degree of kinship with the deceased or donor as well as on the type of assets being inherited. If the net tax base is positive, a progressive marginal tax schedule is applied to obtain the net tax liability. The tax schedule defines 16 brackets with tax rates ranging from 7.65% to 34%. The final tax

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[5]Notwithstanding this special status, these two regions have regulated IG tax rates similar to the rest of Spain. Appendix A provides a more detailed description of the institutional setting of these two regions.

[6]The inheritance tax base also includes those assets transferred to the heirs by the deceased in a short period before her death. An illustrative example is gifts made by the deceased to heirs during the four years preceding the moment of death.

liability to be paid is obtained after considering any tax credit and the corresponding scaling factor, which depends on the pre-bequest wealth of the taxpayer and group.

The Spanish IG tax system establishes that inheritance taxes must be paid in the region of residence of the deceased person. By contrast, the region where gift taxes are paid depends on the type of assets transmitted. For example, inter-vivos transfers involving real assets are paid in the region where assets are located while taxes for gifts entailing any other type of asset are paid in the region of residence of the grantee.

In terms of tax revenues, the IG tax represented 3.78%[7] of annual total revenues at the regional level between 2002-2019. This percentage increases to 19.7% if only tax revenues directly controlled by the regions are considered (i.e those coming from decentralized taxes).[8]

2.1 Regional Inheritance and Gift Tax Credits and Deductions

The administration and regulation of the IG tax in Spain were decentralized in 1996. This meant that regions were awarded regulatory power to introduce tax credits and tax deductions as well as to modify the tax schedule or the scaling factors at their will. I collect information on the inheritance and gift tax reforms introduced by regional governments contained in the regional tax books (*Libros de Tributación Autonómica*) published by the Spanish Ministry of Finance and the regional fiscal reports from the Spanish General Council of Economists (*Consejo General de Economistas de España*). I complement this data with the official tax codes and their successive modification of the Basque Country and Navarre.

It is worth noticing that, though IG taxes were decentralized to the regions since 1996, regional governments did not exercise this right until the beginning of the 2000s when they started to modify the IG tax code rather frequently. Most of these tax reforms implied the introduction of tax deductions and tax credits, the latter in form of sizable tax refunds as a percentage of the net tax base. Some regions also introduced their own marginal tax schedule or reduced the size of the scaling factors which turned out to work as implicit tax credits. Interestingly, almost all of these tax discounts were designed to apply to *any asset* included in the tax base.[9]

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[7]This percentage has been computed using homogeneous data series of regional tax revenues available at Fundacion de Estudios de Economia Aplicada (FEDEA) See here

[8]The taxes decentralized to regions are: wealth tax, real estate transfer tax, and tax on gambling machines. Regional governments have limited regulatory power regarding the labor income tax, the vehicle registration tax, and the tax on gambling activities

[9]The rationale behind this legislative action is that the default rule already includes generous tax deductions for the most common inherited assets, such as family business or main dwelling, and thus regions did not have much room to reduce these asset-specific tax liabilities for close heirs and donees.

2.1.1 Close heirs and donees

The majority of these tax reforms were introduced to reduce the tax liability of close heirs and, to a lesser extent, of close donees with respect to the default. I refer to close heirs and donees as descendants older than 21, ascendants and spouses (group (ii)), and descendants younger than 21 (group (i)). Group (ii) is the largest group of taxpayers as it concentrates 86% and 93% of the total inheritance and gift taxpayers in Spain, respectively.

To illustrate how frequently regions have modified the regional tax schedule, the regional maps displayed in Figure 1 depict the number of tax reforms for heirs and donees of group (ii) introduced by each Spanish region. Both maps reveal substantial heterogeneity in the regional tax reform activity, with Murcia, Castile and Leon, and Aragon as the regions which have modified their tax code more frequently. All regions, except Ceuta and Melilla, have reformed the IG tax code at least once over the time period considered.[10]

Figure 1: Number of Inheritance and Gift Tax Reforms 2002-2019 - Group (ii)

(a) Inheritance Tax   **(b)** Gift Tax
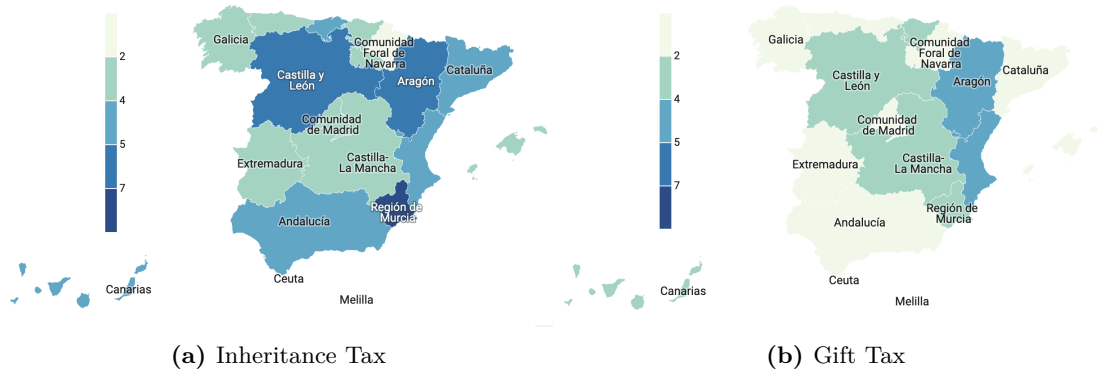
This Figure depicts the number of tax reforms for close heirs and donees (group (ii)) introduced by Spanish regions. Panel 1a refers to the inheritance tax while Panel 1b refers to the gift tax. These figures have been constructed using the inheritance tax regulation contained in the regional tax books published by the Spanish Ministry of Finance, as well as in the regional fiscal reports produced by the General Council of Spanish Economists.

Even though most tax changes introduced by regional governments were aimed to reduce the tax liabilities of close heirs and donees, some of them implied a considerable reduction in the tax discounts previously introduced if not their repeal. For instance, Murcia abolished a tax credit in form of a tax refund of 99% of the net tax base[11] for heirs of group (ii) in 2013. Likewise, the Canary Islands also revoked a tax credit of 99.9% for this group in 2012 and replaced it with a 0% tax credit plus a tax deduction of just 40,000 euros. Appendix Figures C.2 - C.3 distinguish between changes in IG tax regulation for close heirs and donees

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[10] Figure OA.1 reproduces the same maps focusing on heirs and donees from group (i) and shows that young descendants' tax liabilities have also been subject to several reforms.

[11] With a limit of 300,000 euros

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that implied a proper introduction of a tax discount from those that involved a repeal or a significant reduction in those previously legislated. Both figures reveal that most of these tax reforms led to the introduction of tax discounts or their expansion, while only very few regions actually limited or abrogated them at the end of 2000s.[12]

2.2 Inheritance and Gift Tax Calculator

Using the information on tax reforms, I construct a tax calculator for heirs and donees belonging to group (ii). The net tax base for an inheritance or gift amount in tax bracket j, region r, and year t is computed as follows:

$$\text{Net Tax Base}_{jrt}^i = \min\Big\{0, (\text{Main Dwelling} - k_{rt}) \times (1 - tc_{rt}^{h,i}) + \text{Business Assets} \times (1 - tc_{rt}^{b,i})$$
$$+ \text{Other Assets}) - td_{rt}^i\Big\}$$

where $tc_{rt}^{h,i}$ denotes the tax credit specific to the main dwelling up to some limit k and $tc_{rt}^{b,i}$ refers to the tax credits specific to business assets[13] and td_{rt}^i denotes any general tax deduction applicable to the gross tax base for descendants older than 21, descendants, and spouses. Other assets include land, life insurance, financial assets, etc.[14] Next, if the net tax base is positive, the tax quota is computed as follows:

$$\text{Tax Quota}_{jrt}^i = (q_{jr} + (\text{Net Tax Base}_{jrt}^i - b_j^{lb}) \times \tau_{jrt}) \times (1 - tc_{rt}^i) \times \text{SF}_{rt} \quad i \in \{\text{Inheritance,Gift}\}$$

where q_{jr} is the tax payment corresponding to the first X euros of the net tax base for bracket j and τ_{jrt} is the marginal tax rate applicable to the remaining amount (i.e. Net Tax Base$_{jrt}^i - b_j^{lb}$ where b_j^{lb} is the lower bound of tax bracket j). Finally, tc_{rt}^i denotes any general tax credit, which usually takes form of a tax refund expressed as a fraction of the net tax base[15], and SF_{rt} refers to the scaling factor, which is increasing in heirs or donees' pre-inheritance or

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[12]Regional governments introduced very few tax reforms for more distant relatives and non-relatives (i.e. those belonging to group (iii) and (iv)). Figure OA.2 shows that only very four regions introduced tax reforms for heirs of group (iii) and only one for heirs of group (iv), while donees in either group did not experience any tax reform over this period. Online Appendix Figures OA.5 and OA.6 show that the few tax reforms for heirs of group (iii) and (iv) also targeted tax relief for this group in line with the tax reforms introduced for close heirs and donees.

[13]The default law contemplates a tax credit in form of a tax refund of 95% of the net tax base for the main dwelling of the deceased person up to a 120,000 euros limit. Inherited business-related assets enjoy a tax credit in form of a tax refund of 95% of the net tax base with no limit.

[14]Life insurance amounts and assets declared as cultural heritage have traditionally been subject to specific tax deductions. I do not consider life insurance-specific tax deductions as I cannot observe the pre-tax amount corresponding to this asset. To avoid not accounting for these discounts to become a potential source of bias in my estimates, I drop from the sample those inheritances including life insurance.

[15]An example: suppose region r has in place a 90% tax credit for close heirs and donees. This implies that these taxpayers will only have to pay 10% of their net tax base

pre-gift wealth[16]. Once the tax quota and the net tax base are computed, the effective tax rate can be obtained as:

$$\tau_{jrt}^{E,i} = \frac{\text{Tax Quota}_{jrt}^{i}}{\text{Net Tax Base}_{jrt}^{i}} \quad i \in \{\text{Inheritance,Gift}\}$$

Notice that the effective tax rate is allowed to vary across regions and time as local governments introduced different tax deductions (td_{rt}^{i}) and credits (tc_{rt}^{i}) as well as modified the marginal tax schedule (τ_{jrt}) at various points in time. Regions have also increased the generosity of the tax credit specific to inherited main dwellings over time. Appendix B provides a more detailed description of the construction of the effective tax rates for each bracket.

Figure 2 presents the inheritance tax quota to be paid in each Spanish region by an heir inheriting the main dwelling of the deceased person valued at 150,000 euros and 50,000 euros cash in 2006 and 2014, as an illustrative example. As can be inspected, the difference in tax quotas paid for the same inheritance across regions in 2006 could be as high as 8000 euros.

Figure 2: Regional Differences in Inheritance Tax Quota - Group (ii)

(a) 2006   **(b)** 2014
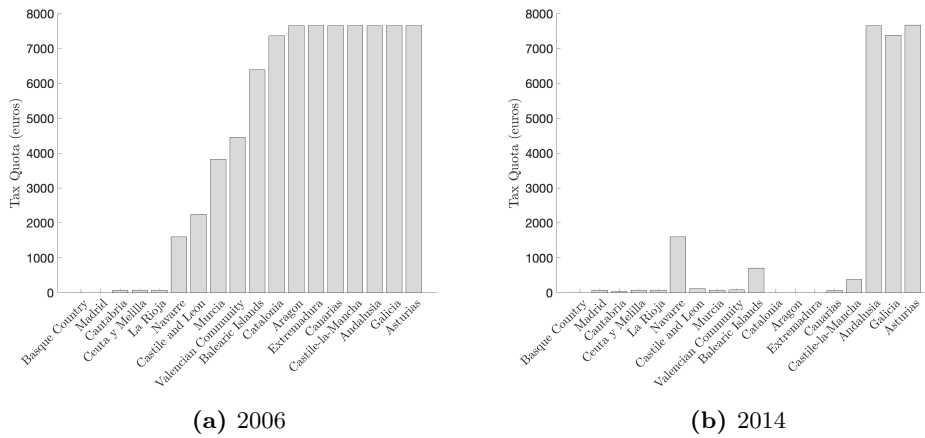
This figure depicts the inheritance tax quota to be paid by an heir (ascendant or descendant) inheriting the main dwelling valued at 150,000 euros and 50,000 euros cash by region in 2006 and 2014, respectively. The tax quota has been obtained by applying the inheritance tax calculator, which has been constructed using the information on tax reforms contained in the regional tax books published by the Spanish Ministry of Finance, as well as in the regional fiscal reports produced by the General Council of Spanish Economists.

Figure 3 presents the average effective inheritance and gift tax rate for heirs and donees of group (ii) by region and year. These average effective rates have been constructed by taking the average gross tax base value for each bracket and applying the corresponding general tax deductions and credits regulated at the regional level to obtain the corresponding tax

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[16]The scaling factor takes values between 1 to 1.20 under the default law and it is equal to 1 for close heirs and donees. Some regions changed the scaling factor to a number close to 0, which worked as an implicit tax credit. See Appendix B for more details

quota and net tax base. The depicted average effective tax rates vary from 0.0% (0.0%) to 11.46% (12.8%) for inheritance (gift) tax showing substantial regional variation induced by the tax reforms regulated. As can be seen, the average trend in all Spanish regions has been to reduce the tax liabilities of this group. The cumulative reduction in both average effective tax rates has been sizable: the effective average inheritance and gift tax rates fell by 85% and 50% in 2019, respectively.

Figure 3: Average Effective Inheritance and Gift Tax Rate - Group (ii)

(a) Regional Inheritance Tax Rates   **(b)** Regional Gift Tax Rates

This figure depicts the average effective inheritance tax rare (Panel 3a) and gift tax rate (Panel 3a) for group (ii) for each of the 19 Spanish regions and year

This downward pattern in IG tax rates also masks important heterogeneity along the tax schedule. Figures C.4 and C.5 in the Appendix display average bracket-specific IG tax rates for each region and year. The heatmaps reveal a considerable degree of regional heterogeneity for middle-top and top tax brackets. As can be inspected, regional dispersion in the bottom brackets rates is lower than in the top brackets, mainly due to the timing of the introduction of the tax discounts, whereas differences between middle and top bracket rates are accounted by both the degree of the generosity of the tax discounts and the timing of their introduction.

3   Household Data

I use household-level data from the EFF survey between 2002 and 2018. This survey is conducted every two years by the Bank of Spain and provides rich information on households' wealth, income, consumption, and demographics. Note that, although the survey is actually conducted at triennial frequency, every wave contains household observations in two consecutive years leading to biannual information.[17] To identify households in the survey who receive an inheritance, I exploit information on two survey questions. First, I use the

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[17]For example, the 2002 wave contains information on households surveyed in the years 2002 and 2003

information on the form and year of acquisition of real estate assets and business-related assets, which includes *inheritance* as a possible answer, as well as the percentage of the property owned by the household and their value at the time of the acquisition. Second, I use the information on the reception of an inheritance or gift from someone who does not currently belong to the household.[18] In case of a positive answer, households are additionally requested to report the actual pre-tax amount, the year of its reception as well as the type of assets involved (i.e. cash, land, real estate, etc.). I classify households as heirs whenever they report (i) the inheritance of real estate assets or/and business assets (ii) a cash transfer in form of inheritance or gift from someone who does not currently belong to the household in the same year. Next, I classify households as donees whenever they only report a cash transfer in form of inheritance or gift from someone who does not currently belong to the household. This disaggregated information allows me to better approximate the net tax base of each household for both inheritances and gifts, as inherited real estate and business assets have enjoyed generous tax discounts.[19]

The EFF has a panel dimension in which households might be included at most for four consecutive waves. This implies that heirs and donees are observed up to a maximum of 10 years with gaps[20]. Since households are asked retrospectively, I construct an unbalanced panel of households that can be tracked for at least two consecutive waves and report the reception of one inheritance/gift within that period. Households reporting more than one inheritance or gift are excluded. Table 1 presents summary statistics for all inheritances and gifts. Spanish households receive around 58,000 euros on average in form of inheritances or gifts. This average goes up to almost 100,000 when considering only bequests in form of cash, real estate, and other assets. Table D.1 provides net wealth descriptive statistics of heirs and donees at the year of the wealth transfer receipt along with the wealth distribution.

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[18]Households have been asked retrospectively this question in the last four EFF waves. In the way the question is formulated, it does not differentiate between inheritances and gifts.

[19]The default law contemplates a tax credit for the main dwelling of the deceased person in form of a tax refund equal to the 95% of the tax base of this asset up to a 120,000 euros limit. Inherited business-related assets enjoy an unconditional tax credit in form of a tax refund equal to the 95% of the tax base of this asset

[20]Notice that the household panel is unbalanced because households can be tracked between 2 and 4 consecutive waves. In addition, the survey is conducted at triennial frequency with each wave containing information from two consecutive years. This means that heirs can be observed up to 10 years before and up to 7 years after the inheritance or gift receipt with gaps. To be more precise, one period before/after the tax payment can be either 2, 3, or 4 years

Table 1: Summary Statistics Inheritance and Gift Receipts

	All Inheritance and Gifts					
	Mean	sd	Min.	Max.	N	# Obs
Bequest value	58.26	135.94	1.24	9979.74	530	1759
Bequest year	2009	4.29	2002	2018	530	1759
	Gifts (cash transfers)					
Gift value	29.04	57.00	1.29	1038.82	270	887
Gift year	2009	4.30	2002	2018	270	887
	Inheritance					
Inheritance value	99.76	193.00	1.24	9979.74	260	872
Inheritance year	2009	4.26	2002	2017	260	872

Bequest value is expressed in thousand euros and is CPI-adjusted to
the year 2016. EFF survey weights are applied such that averages are
representative of the Spanish population

To examine how the absolute and relative size of the tax base varies along the wealth
distribution, Figure 4 plots the average tax base and its share out of households' liquid
assets in the year of the bequest receipt for different net wealth percentiles. The tax base
is constructed after applying the tax deductions applicable to housing and business-related
assets, which have been roughly constant for all regions since the beginning of the period.
For the sake of comparability with the Swedish study by Elinder et al. (2018), I include
only heirs and donees with positive net wealth. Panel 4a depicts the average tax base along
the wealth distribution. As expected, the average value of bequests increases as we move
up in the net wealth distribution, particularly at the top. Conversely, the relative size of
the tax burden with respect to household stock of liquid wealth follows the opposite pattern
and becomes particularly large at the bottom of wealth distribution for inheritances (i.e. it
amounts to 86 times households' stock of liquid wealth).[21]

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[21] Although the negative relationship between tax liabilities and the distribution of wealth of recipients is
also present in Sweden (Elinder et al., 2018; Nekoei and Seim, 2022), the relative size of the tax liabilities
with respect to household stock of gross wealth at the bottom in Spain is 6 which more than doubles the one
in Sweden where it takes a value of 0.9.

Figure 4: Absolute and Relative Size of the Tax Base by Wealth Percentile

(a) Average Tax Base   **(b)** Tax Base-to-Liquid Assets Ratio
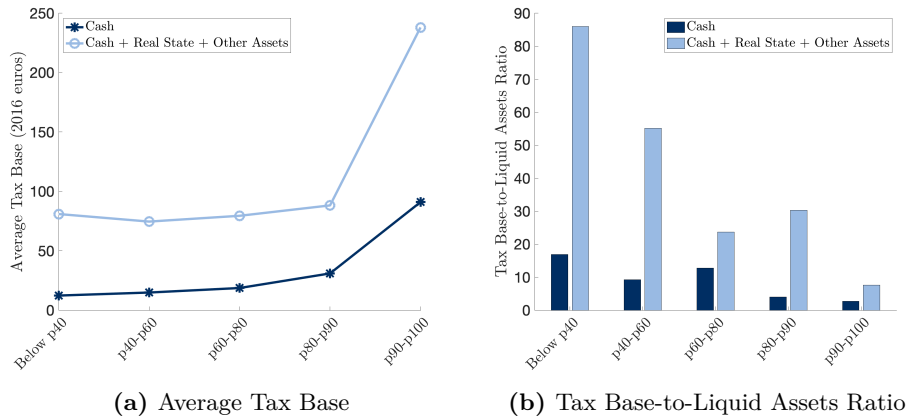
Wealth percentiles are constructed using net wealth. Panel 4a shows the average tax base (net of real assets and business assets tax deductions) in 2016 euros. Panel 4b shows the ratio of the tax base (net of real assets and business assets tax deductions) with respect to household stock liquid financial wealth in the year of the bequest receipt. Liquid assets include checking, savings accounts, and stocks. Only households with positive net wealth are considered. EFF survey weights are applied such that the reported values are representative of the Spanish population

3.1 Sample Selection

The survey is uninformative about the degree of kinship between the heirs/ donees and the deceased person/donor and thus, about the specific group of taxpayers to which heirs and donees belong to. By looking at heirs' and donees' characteristics, it can be ensured that no taxpayer belongs to group (i) in the sample as there is no one-person household reporting an inheritance or gift who is younger than 21. For the main analysis, I will assume that heirs and donees belong to group (ii) (i.e spouses, descendants, and descendants older than 21) as this group represented around 86% and 93% of the total inheritance and gift taxpayers in 2015, respectively.[22].

Inheritance taxes are paid in the region of residence of the deceased person while taxes on gifts involving only cash are paid in the donees' region of residence. Therefore, for households receiving only cash transfers, I will input the gift effective tax rate in their region of residence while for households receiving inheritances, I will use the effective tax rate in their region of birth as a proxy for the region of residence of the deceased person. If households consist of couples at the time of the inheritance receipt, I only consider those households where both spouses were born in the same region. At any rate, this could pose a threat to the identification strategy if cash transfers are not gifts, given that inheritance and gifts are subject to different effective tax schedules for any group. To overcome this caveat,

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[22]Unfortunately, there is very scarce information about the distribution of taxpayers according to their group of kinship. The most updated official information on this matter can be found in Libro blanco sobre la reforma tributaria, 2022

I will consider cash transfers as inheritances and compute the corresponding tax rate as an exercise in the robustness check section.

4   Empirical Analysis

4.1   Identification Strategy

The variation in inheritance or gift tax rates paid by heirs and donees stems from the regional differences in bracket-specific tax reforms undertaken by local governments after the decentralization of the tax. To interpret the coefficient on the regional effective IG tax rate as the causal effect of the tax change on wealth mobility and household wealth and debt, there should not be other systematic regional factor driving both IG tax rates and outcome variables.

A concern when studying the effect of geographical differences in taxation is whether these regional tax changes are correlated with macroeconomic aggregates or regional government finances that could affect household outcomes (Cloyne and Surico, 2017). Appendix Table C.2 presents the estimation results of separately regressing the average inheritance tax rate and gift tax rate on lags of unemployment, CPI, and GDP per capita controlling for year and region-fixed effects. Appendix Table C.3 presents the estimation results of regressing the public expenditure per capita[23] and debt-to-GDP ratio on the average inheritance tax rate and gift tax rate. As can be inspected, changes in the inheritance and gift tax rates do not seem to be correlated with past macroeconomic aggregate conditions or local finances at the regional level. They are, however, correlated with the political orientation of the regional government. Appendix Table C.4 reveals that there is a negative and significant statistical correlation between having a right-wing party in power and IG tax rates. Instead, Appendix Table C.5 shows there is not a systematic difference in terms of economic performance or government spending between right-wing and left-wing regional governments. These results altogether suggest that while there seems to be politically-driven variation in IG taxes, they could be taken as exogenous to regional macroeconomic conditions influencing household wealth decisions and wealth mobility.

In contrast to wealth taxation, for which there is evidence of wealth-tax induced regional mobility of taxpayers (Agrawal et al., 2020; Brülhart et al., 2019), selection into regional inheritance tax treatment does not represent a concern in this setting given the nature of death itself, the frequency of the tax changes, and the fact that inheritors in Spain pay

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[23]Public expenditures in health, schooling, and social protection programs.

taxes in the region of residence of the deceased person during the last 5 years prior to death. Moreover, gift-tax-induced regional mobility seems even less of a concern as gift taxes in the form of cash are filed in the region of residence of the donee.

4.2 Empirical Specification

To estimate the effect of IG taxation on heirs' and donees' wealth mobility and wealth and debt outcomes separately, I rely on an event-study strategy:

$$y_{irt} = \sum_{\substack{k=-3 \\ k\neq -1}}^{2} \beta_k \cdot \mathbf{1}(k = t - t_{w^i}) \times \tau_{ijrt=t_{w^i}} + \zeta_i + \zeta_t + \nu_{irt} \tag{1}$$

where y_{irt} denotes the outcome variable of household i who pay taxes in region r in year t, $\mathbf{1}(k = t - t_{w^i})$ are indicators for each event period k before and after the year of the inheritance/gift receipt, t_{w^i}, $\tau_{ijrt=t_{w^i}}$ is the average effective tax rate for household i with tax base corresponding to tax bracket j and paying taxes in the region r at time $t = t_{w^i}$. The reference period is the last year each household is observed before it receives the inheritance or gift, $y = -1$, which is omitted.[24]

Notice that since the inheritance tax system is progressive, the average effective tax rate will vary across households within a region-year for both inheritances and gifts. Household-fixed effects (ζ_i), as well as year-fixed effects (ζ_t), are included to account for any household-specific and time-varying shocks that might influence heirs and donees' wealth mobility and wealth. The event-study coefficients of interest are $\sum_{k=0}^{3} \beta_k$, which recover the difference in wealth or mobility between those heirs or donees subject to a higher bracket-specific average tax rate and those subject to a lower one. Standard errors are robust to heteroskedasticity and clustered at the region-of-residence-bracket level for gift recipients and at the region-of-birth-bracket level for inheritance recipients, respectively.[25]

5 Results

5.1 Wealth Mobility

I start by studying how Spanish IG taxation affects the wealth mobility of heirs and donees. To that end, I follow one of the most standard approaches to measure intragenerational wealth mobility (Bayaz et al., 2010; Elinder et al., 2018; Jäntti and Jenkins, 2015), which

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[24]Recall that a period can be either 2, 3 or 4 years

[25]There are 19 regions × 16 brackets = 304 clusters.

consists in comparing transition probabilities in the wealth distribution for heirs and donees before and after receiving an inheritance/gift. I partition the net wealth distribution of taxpayers into 10 percentiles and define nine transition probabilities, each of them as the probability of moving upwards from the *th* percentile of the net wealth distribution of Spanish heirs and donees each year[26].

Figure 5-7 reports the estimated $\beta_k \times 100$ coefficients from Equation 1 when the dependent variable is the probability of moving upwards for inheritances and gifts recipients conditional on being at different parts of the net wealth distribution at the time of the bequest receipt. The estimated coefficients in the previous periods to receive the inheritance or gift are not statistically significant, supporting the existence of parallel trends in wealth mobility between households subject to different tax rates. The effects of higher inheritance taxes display a hump-shaped response along the net wealth distribution: while higher tax rates significantly and persistently decrease the wealth mobility of heirs below the 50th percentile (see Panels 5a-6a), this effect becomes statistically insignificant and close to zero for heirs belonging to the top of the wealth distribution (see Panel 7a). Specifically, a one percentage point increase in the inheritance tax rate reduces the probability of heirs at the 10th percentile moving upwards by 0.01%-0.22% in the period after the inheritance receipt (between 4 to 7 years after). The point estimates for heirs placed between the 20th-50th percentile at the time of the inheritance receipt are similar, with these ranging between 0.01% to 0.33%. In contrast, higher gift taxes on cash transfers do not seem to affect significantly wealth mobility at any part of the net wealth distribution (see Panels 5b-7b).

To be more precise in determining the magnitude of the wealth mobility effect of a rise in the inheritance tax rate, Table E.1 presents the estimated coefficients of Equation 1 and the corresponding percentage change in the outcome variables. The latter is computed as the inheritance tax effect divided by the mean of the outcome variable one period before the tax payment. As can be inspected, the negative effect of an increase in inheritance taxes on bottom-wealth mobility is considerable. In particular, an increase in inheritance tax rates decreases the wealth mobility of heirs at the 10th percentile by 35% to 76% in the following years after the tax payment compared to their pre-inheritance average wealth mobility. These effects continue to be sizable for heirs at the 40th-50th percentiles, whose wealth mobility decreases between 17% to 56%.

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[26]I use survey weights provided in the EFF to ensure households' rank position is representative of the Spanish population

Figure 5: Effect of Inheritance and Gift Taxes on Bottom-Wealth Mobility

(a) Inheritances

(b) Gifts (cash transfers)
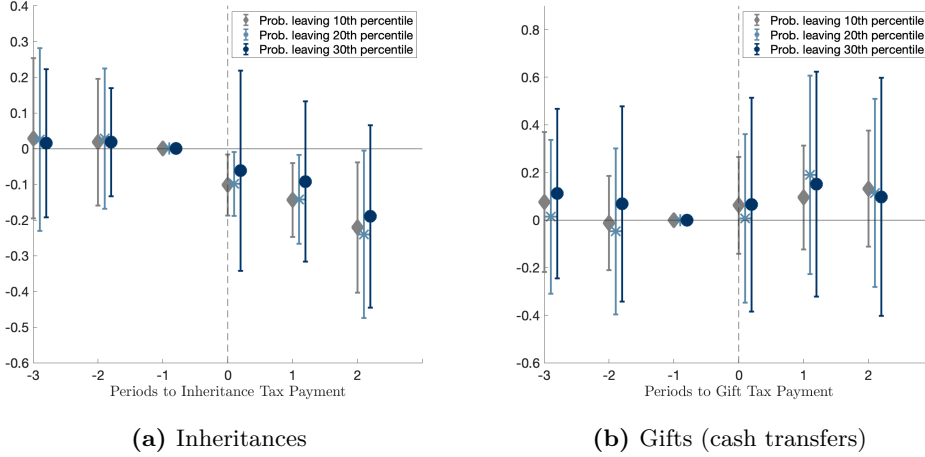
This figure plots the event study estimates ($\hat{\beta}_k \times 100$) and corresponding 90 percent confidence bands of the specification of Equation 1. The dependent variable is the probability of moving upwards in the net wealth distribution for households at the 10th-30th net wealth percentile at the time of the bequest receipt. The treatment variable is the average bracket-specific effective tax rate. Standard errors are robust and clustered at the region-of-residence bracket level for donees and at the region-of-birth bracket level for heirs. Wealth transfers in form of only cash are assumed to be gifts.

Figure 6: Effect of Inheritance and Gift Taxes on Middle-Wealth Mobility
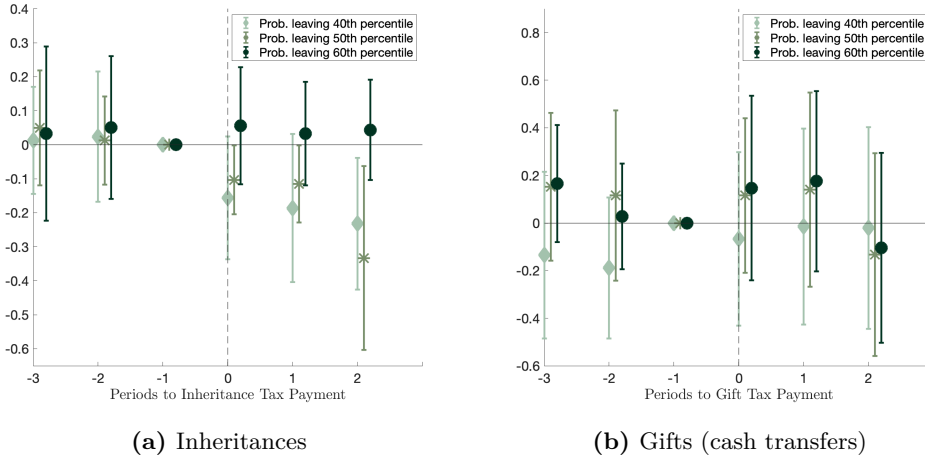
(a) Inheritances

(b) Gifts (cash transfers)

This figure plots the event study estimates ($\hat{\beta}_k \times 100$) and the corresponding 90 percent confidence bands of the specification of Equation 1. The dependent variable is the probability of moving upwards in the net wealth distribution for households at the 40th-60th net wealth percentile at the time of the bequest receipt. The treatment variable is the average bracket-specific effective tax rate. Standard errors are robust and clustered at the region-of-residence bracket level for donees and at the region-of-birth bracket level for heirs. Wealth transfers in form of only cash are assumed to be gifts.

Figure 7: Effect of Inheritance and Gift Taxes on Top-Wealth Mobility
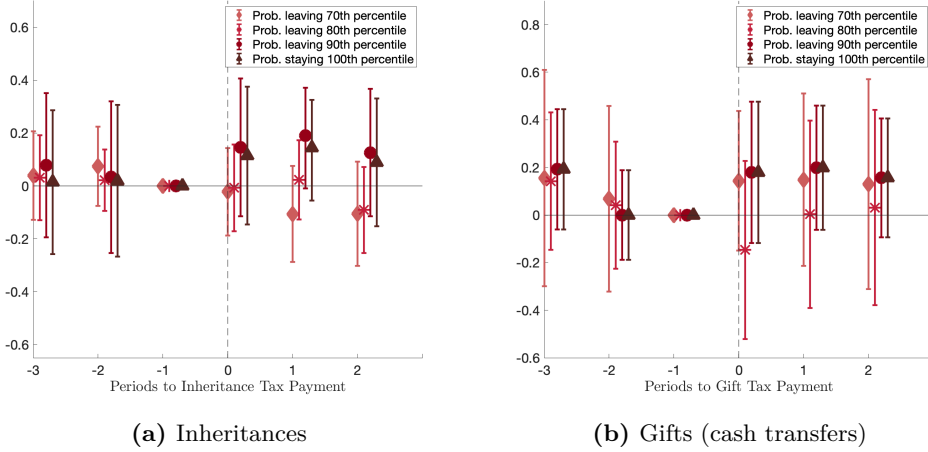
(a) Inheritances

(b) Gifts (cash transfers)

This figure plots the event study estimates ($\hat{\beta}_k \times 100$) and the corresponding 90 percent confidence bands of the specification of Equation 1. The dependent variable is the probability of moving upwards in the net wealth distribution for households placed at the 70th-90th net wealth percentile and the probability of staying for households placed at the 100th net wealth percentile at the time of the bequest receipt. The treatment variable is the average bracket-specific effective tax rate. Standard errors are robust and clustered at the region-of-residence bracket level for donees and at the region-of-birth bracket level for heirs. Wealth transfers in form of only cash are assumed to be gifts.

5.2 Household Wealth and Debt

To better understand the empirical drivers behind these bottom-wealth mobility patterns, I investigate how inheritance taxes affect households' gross wealth and debt separately. The EFF survey distinguishes between households' types of wealth, such as financial or housing wealth. Financial wealth includes bank deposits, stocks, mutual funds as well as fixed-income securities, and private pension plans. The survey also disaggregates debt between mortgage-related debt and non-mortgage-related debt. The latter includes personal loans, credit lines, current account overdrafts, advances as well as loans from friends or family.

Figure 8 presents the estimated β_k coefficients when the dependent variables are (logged) gross wealth and their components (Panel 8a-8e) or debt-to-wealth ratios expressed in percentage terms (Panel 8b-8f) for different groups of households depending on their net wealth position before the inheritance receipt. All variables are CPI-adjusted to 2016 prices. First, the estimated coefficients in the previous periods before paying inheritance taxes are not significant, supporting the existence of parallel trends in household wealth and debt before the change in taxes. Panel 8a shows that a one percentage point increase in tax rates reduces gross wealth by 8.9-12.2 percent in the following years to the reception of inheritance for bottom-wealth households (i.e. those below the 40th percentile of the net wealth distribution). It is clear from this figure that the negative effect of inheritance taxation on gross

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wealth is mainly explained by its negative impact on financial wealth rather than housing wealth. Heirs subject to higher levels of taxation experience a reduction in financial wealth equal to 19.4-24.1 percent in the years following the reception of the inheritance in comparison to those subject to lower tax rates. In relative terms with respect to the pre-inheritance wealth averages, these point estimates imply a drop in gross wealth and financial wealth between 0.78-1.07 percent and 1.77-2.82 percent, respectively (see Table E.2). Appendix Figure E.1a shows that this decrease in financial wealth is explained mostly by a decrease in liquid financial wealth, that is, bank deposits and savings accounts.

In addition, Panel 8b shows this negative effect of inheritance taxes on less-wealthy heirs' gross wealth goes in parallel with a rise in personal credit debt. Specifically, a one percentage point increase in the inheritance tax rate rises bottom-wealth households' personal credit debt-to-wealth ratio between 3.2 to 7.1 percentage points in the years following the tax payment. The effect is statistically significant up to one period after the tax payment (i.e between 2 to 4 years after). These point estimates imply an increase in the personal credit debt-to-wealth ratio between 3.9-8.6 percent in the years after the tax payments with respect to their pre-inheritance average ratio (see Table E.2). Appendix Figure E.1b plots the estimates for the sum of other types of debt such as credit lines, current account overdrafts, advances, and loans from relatives as a percentage of gross wealth. As can be inspected, higher taxes do not seem to affect significantly other types of debt holdings of households at the bottom of the wealth distribution.

Panel 8c shows that middle-wealth households (i.e. those between the 40th and 70th percentiles of the net wealth distribution) subject to higher tax rates decrease also their total gross wealth on impact in comparison to those subject to lower tax rates. Again, this decrease in gross wealth is explained by a drop in financial wealth. Specifically, a one percentage point increase in tax rates decreases total gross wealth and financial wealth by 5.5 and 8.8 percent, respectively. In comparison with the bottom-wealth group, the negative effect of inheritance taxes on gross wealth is smaller in magnitude on impact and dissipates after one period. Moreover, middle-wealth households' debt does not react significantly to higher levels of taxation as shown in Panel 8d. Finally, results in Panel 8e and 8f suggest that higher tax rates seem to affect significantly neither top-wealth households' gross wealth nor debt at any point in time.

Figure 8: Effect of Inheritance Taxes on Household Wealth and Debt
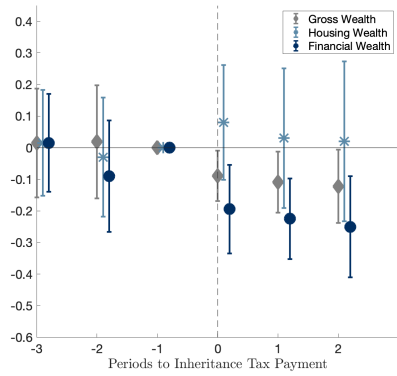
(a) Bottom-wealth households
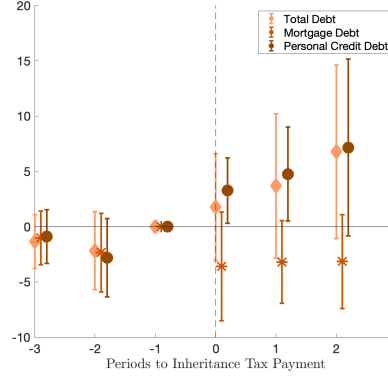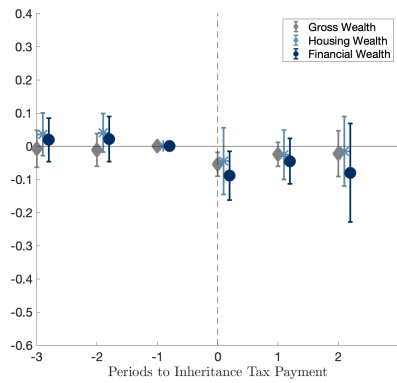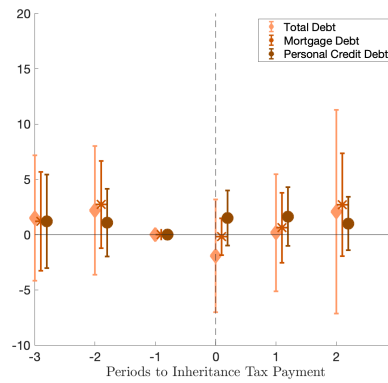
(b) Bottom-wealth households

(c) Middle-wealth households

(d) Middle-wealth households

(e) Top-wealth households

(f) Top-wealth households

This figure plots the event study estimates $(\hat{\beta}_k)$ and corresponding 90 percent confidence bands of the specification of Equation 1. Bottom-wealth households are between the 10th-40th percentile of the net wealth distribution, middle-wealth are those between the 40th-70th percentiles and top-wealth are those above the 70th percentile at the time of the inheritance receipt. The dependent variable in Panels 8a-8e is (logged) gross wealth, financial wealth, or housing wealth. The dependent variable in Panels 8b-8f total debt-to-wealth ratio, mortgage debt-to-wealth ratio, or personal credit debt-to-wealth ratio in percent. Financial wealth includes bank deposits, stocks, mutual funds, pension plans, and life insurance. Housing wealth includes real estate property. Standard errors are robust and clustered at the region-bracket level. The sample includes only heirs

5.3 Understanding the Effects of Inheritance Taxes on Bottom-Wealth Mobility

Liquidity constraints and restricted access to financial instruments. The results so far suggest that bottom-wealth households decrease their financial wealth and increase their non-mortgage debt when subject to higher levels of taxation, which translates into serious detrimental effects in terms of wealth mobility for these households. However, it is not straightforward that liquidity constraints necessarily induce an increase in personal credit debt at the time of the tax payment. One reasonable explanation relies on heirs' restricted access to financial instruments. First, the Spanish IG tax law makes the bank system liable for the tax liabilities on the deceased person's assets held by the bank (i.e bank accounts, shares, etc.) in case heirs do not make the tax payment on time.[27] As a result of this law mandate, the bank system freezes all assets of the deceased person on the same day of her death until heirs give proof of tax payment, which prevents heirs from using the liquid assets of the deceased person to meet the tax requirements. Second, the Spanish bank system does not allow heirs to put the yet-to-be-inherited real estate assets as collateral for loans. Thus, liquidity-constrained heirs have few options besides taking on personal credit debt to pay the tax liabilities. In addition to this limitation in terms of debt instrument availability, the Spanish IG tax law requires heirs to pay taxes in the next 6 months following the death event to obtain access to the deceased person's estate. If heirs fail to do so, the government gains ownership of all assets comprising the deceased person's estate. Heirs can ask for a tax moratorium of 6 extra months and/or tax installment in a maximum of 5 quotas. However, asking for a tax moratorium or installment entails additional costs in form of interest on late payment as the Treasury considers the tax payment within the extended time period as tax debt.[28] On top of that heirs would not gain full ownership rights over the deceased person's estate until the tax payment is completed. This limited access to financial instruments together with the short time window to pay the tax liabilities might force liquidity-constrained heirs to resort to personal debt to meet the tax payments when being subject to higher levels of inheritance taxation.

Illiquidity of inheritances and delays in selling inherited real estate property. Although the above-mentioned singularities of the Spanish IG tax system might translate into higher household debt on impact due to restricted access to financial instruments, it is less obvious why the detrimental effects of inheritance taxes on bottom-wealth mobility and

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[27]See: Ley 29/1987, de 18 de diciembre, del Impuesto sobre Sucesiones y Donaciones.

[28]See Ley General Tributaria. If heirs ask for tax installment they have to additionally fulfill a collateral requirement with the Treasury. The annual interest on late payment has been on average 5% between 2002-2019

personal credit debt persist over time. In combination with this channel, the illiquidity of inheritances and delays in selling inherited real estate property could help explain the lasting negative effect of taxes on bottom-wealth mobility. First, a large proportion of households at the bottom tend to inherit real estate property as Spain features one of the highest homeownership rates at the bottom of the wealth distribution among OECD countries. In 2014, this rate was almost 30% for households below the 20th net wealth percentile compared to the 2% and 7% rates in France and Germany.[29] This higher homeownership rate at the left tail of the wealth distribution is also reflected in the composition of bequests for bottom-wealth households: 44% of the total bequests received by households below the 40th net wealth percentile include some form of real estate asset.[30]

Having received real estate property as inheritances, delays in selling this property might help sustain the liquidity constraints of bottom-wealth households who take on personal credit debt at the time of the tax payment. To explore this channel, I first take a look at whether selling inherited housing is correlated with lower personal credit debt independently of the tax rates. Figure 9 shows that selling inherited real estate property decreases personal credit debt in the periods after the inheritance receipt for heirs below the median net wealth distribution. In contrast, no effect is found for heirs above the median.[31]

Figure 9: Effects of Selling Inherited Housing on Personal Credit Debt
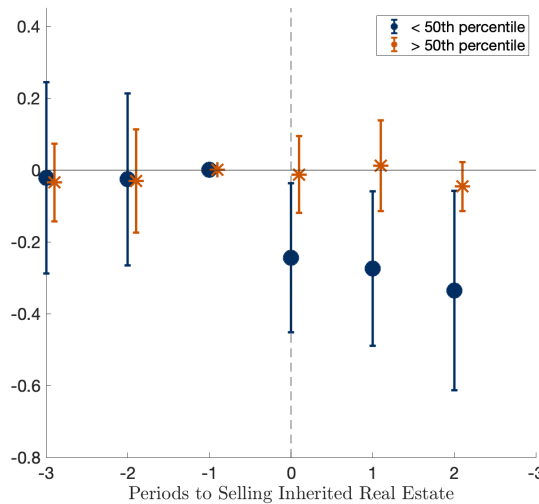
This figure plots the event study estimates and corresponding 90 percent confidence bands of regressing log of personal credit debt on event dummies around the time of selling inherited real estate. The blue coefficients refer to the estimation in the sample of heirs below the median of the net wealth distribution at the time of selling inherited property while the orange coefficients refer to the sample of heirs above the median. Standard errors are robust and clustered at the household level. The sample includes only heirs receiving at least one residential real estate asset

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[29]Data from 2014 Household Survey of Consumer Finance (HCF) wave conducted by the ECB

[30]See Appendix Table D.2

[31]Because of sample size restrictions, I divide heirs into two groups (i.e. below and above the median net wealth). Note that I am only considering those heirs receiving at least one real estate asset as inheritance

Delays in selling the inherited real estate property might arise from market conditions, selling frictions due to shared ownership[32], etc. To provide causal estimates of these delays, I exploit regional heterogeneity in tax-induced restrictions to sell the inherited dwellings together with the regional variation in effective tax rates. The Spanish IG tax system offers generous tax discounts for the main dwelling of the deceased person (i.e. 95% tax credit up to a limit of 120,000 euros) with the condition that heirs must keep this property for a certain amount of years. Heirs can sell the property before but they will have to give back the corresponding fiscal benefits to the Treasury and pay interest on late payments. The default law establishes a minimum period of 10 years although regions have reduced these time restrictions since the mid-2000s. Appendix Figure C.6 shows the regional heterogeneity in tax-induced time restrictions to sell inherited housing. As can be inspected, this heterogeneity arises from regional governments reducing these time restrictions at different years and with different magnitudes. I estimate the following event-study specification:

$$y_{irt} = \sum_{\substack{k=-3 \\ k \neq -1}}^{2} \gamma_k \cdot \mathbf{1}(k = t - t_{w^i}) \times \tau_{ijrt=t_{w^i}} \times Z_{rt} + \zeta_i + \zeta_t + \nu_{irt} \tag{2}$$

where Z_{rt} is the time restriction to sell inherited housing without cost in region r in year t. The parameter γ estimates the additional impact of tax-induced restrictions to sell inherited dwelling on household wealth and debt for heirs subject to 1 percentage point higher tax rates.

Figure 10 presents the estimated γ coefficients in Equation 2 for bottom-wealth, middle-wealth, and top-wealth households when the dependent variable is financial wealth and personal credit debt-to-wealth ratio. The estimates in Panels 10a-10b suggest that longer tax-induced time restrictions to sell inherited dwellings increase the personal credit debt and decrease the financial wealth of less wealthy heirs subject to higher tax rates. This effect remains statistically significant up to 6 years after the tax payment. In contrast, these tax-induced time constraints do not seem to have any significant effect on wealthier heirs' personal credit debt and financial assets. In all, these results point to delays in selling inherited as a relevant factor in explaining the persistence of the effects of inheritance taxes on bottom-wealth mobility as they seem to prevent them from canceling their personal loans and improving their net wealth position earlier.

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[32]Heirs at the bottom tend to hold a lower percentage of ownership than heirs at the top, which might difficult the selling of the property. In the sample, heirs below the 40th net wealth percentile hold own 56% of the inherited property on average while heirs above the 90th net wealth percentile own 76%.

Figure 10: Effects of Tax-induced Restrictions To Sell Inherited Dwellings on Household Wealth and Debt
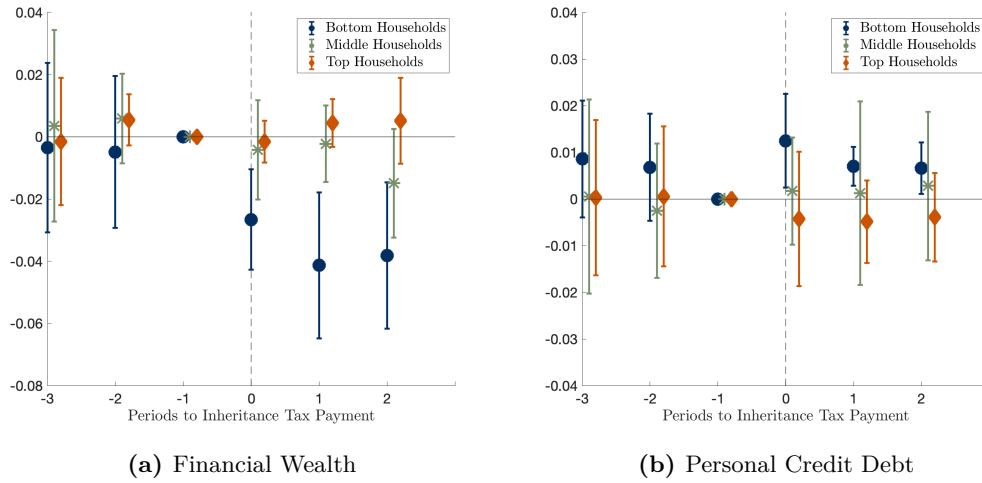
(a) Financial Wealth   **(b)** Personal Credit Debt

This figure plots the event study estimates ($\hat{\gamma}_k$) and corresponding 90 percent confidence bands of the specification of Equation 2. Bottom-wealth households are between the 10th-40th percentile of the net wealth distribution, middle-wealth are those between the 50th-70th percentiles and top-wealth are those between the 80th-100th percentile at the time of the inheritance receipt. The dependent variable in Panel 10a is (logged) total financial wealth while the dependent variable in 10b is the personal-credit-debt-to-wealth ratio. Financial wealth includes bank deposits, stocks, mutual funds, pension plans, and life insurance. Standard errors are robust and clustered at the region-bracket level. The sample includes only heirs

6 Robustness

6.1 Inherited Debt

In Spain, the deceased person's estate includes all assets and their associated liabilities. This implies that heirs become liable for all debts of the deceased person once they accept the inheritance and pay the corresponding taxes. Therefore, it could be that the effect of an increase in inheritance taxes on bottom-wealth heirs' personal credit debt is driven to bottom-wealth heirs inheriting systematically more personal credit debt in regions with higher taxation. Unfortunately, the survey does not provide information about inherited financial liabilities. Yet I explore this mechanism by investigating whether total debt and, in particular, personal credit debt holdings of old-age bottom-wealth households are systematically higher in regions with higher inheritance taxation. Appendix Table F.1 suggests that the personal credit debt-to-wealth ratio of bottom-wealth households above 70 years old is not significantly higher in regions with traditionally higher levels of inheritance taxation.

6.2 Age Profile of Heirs

One possible concern is that the negative effect of inheritance taxes on bottom-wealth mobility is driven by a small group of young heirs who, for standard life-cycle reasons, have almost no wealth at the time of paying the tax liabilities and are forced to take on debt (Elinder et al., 2018). Appendix Tables F.2 present the average age of heirs and the proportion of those younger than 40 along the wealth distribution. First, the average age for different net wealth percentiles clearly suggests that less wealthy heirs are not significantly younger than wealthier ones. Second, although the percentage of younger heirs at the bottom of the wealth distribution is higher than at the top, it only represents 22% of total heirs below the 40th percentile of the net wealth distribution. This percentage remains above 14% up to the 80th percentile of the net wealth distribution. In all, this descriptive evidence suggests that young heirs do not seem to be an important driver of the estimated wealth mobility effects of inheritance taxes.

6.3 Cash Transfers as Inheritances

So far I have assumed that households receiving bequests in form of cash are donees and hence they file taxes in their region of residence which is observed in the survey. If these cash transfers turn out to be inheritances, this could pose a threat to the identification strategy as households should be paying taxes in the region of residence of the deceased person, and gifts and inheritances are subject to different tax rates. To overcome this caveat, I assume these cash transfers to be inheritances and input the corresponding effective tax rates. Appendix Figure F.1 shows that the estimates are similar to the ones in Panels 5b-7b. In all, these results suggest that higher wealth transfer taxes do not significantly affect wealth mobility as long as these entail only cash, highlighting the liquidity dimension of inheritances as an important factor in explaining the wealth mobility effects of inheritance taxation.

6.4 Rejected Inheritances

In Spain, heirs have the right to reject inheritances. The inheritance rejection rate amounts to 9.01% between 2007-2019[33], which is a non-negligible number. Figure F.4 presents the correlation between the regional average effective inheritance tax rate and the rejection rate for both bottom tax brackets and top tax brackets. As it is shown in Panel F.4a, there is a weak positive correlation between the average tax rates for bottom brackets and the percentage of rejected inheritances. If we were to extrapolate the effects of inheritances

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[33]Data from Consejo General de Notariado

taxes on heirs' wealth mobility to the whole Spanish population, this suggestive evidence points towards inheritance taxes having even more sizable effects on wealth mobility at the bottom of the wealth distribution.

6.5 Alternative Specifications

This section explores whether the results are robust to alternative treatment definition. One possible concern is that differences in the asset composition of inheritances along the wealth distribution influence how inheritance taxation affects wealth mobility and household wealth and debt responses as some fiscal benefits have been specific to the type of asset inherited. For instance, middle and top-wealth heirs tend to inherit more business assets, which have enjoyed generous tax credits during the sample period considered, compared to bottom-wealth heirs (See Figure D.1). To account for this I estimate Equation 1 and use the value of net-of-tax inheritance as the treatment variable. Appendix Figures F.2-F.3 present the estimates for wealth mobility and household wealth and debt for different groups of heirs when using this alternative definition of treatment variable. As can be inspected, the main results survive this alternative definition of treatment.

6.6 Other Confounding Factors

Finally, the last concern is whether other types of wealth taxation may confound the inference drawn about the effect of inheritance taxes on household wealth and debt and wealth mobility. Although there is also substantial regional variation in wealth tax rates across Spanish regions as the regulation of this tax was also decentralized in 1998, wealth tax filers in Spain belong to the top 1% of the wealth distribution.[34] Therefore, the average impact of the wealth tax on the whole wealth distribution would thus be too small to become a meaningful confounder. In contrast, I cannot rule out that the capital gains tax on urban real estate property (*Impuesto sobre el Incremento de Valor de los Terrenos de Naturaleza Urbana*) can represent a relevant confounder in this setting. In Spain, real estate property received as inheritance must pay a capital gain tax which varies at the municipality level. If any, the estimated effects of inheritance taxes on household wealth outcomes would represent an upper bound as they could be reflecting the effect of this additional tax.

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[34](Agrawal et al., 2020) report that wealth tax filers amounted to 2.7% of the total Spanish adult population in 2007. This percentage decreased to approximately 0.5% of the 2015 adult population.

7   Conclusion

Understanding the empirical effects of inheritance and gift taxation on wealth mobility is at the heart of the current debate about how taxing transferred wealth could improve equality of opportunity. Although wealth mobility is not equivalent to wealth inequality, there are strong reasons why we should care about how wealth transfer taxation influences the wealth position of households within the wealth distribution. Using Spain as a laboratory, I document that higher inheritance taxes reduce upward wealth mobility at the lower part of wealth distribution through lower financial wealth and higher non-mortgage debt of bottom-wealth recipients. While liquidity constraints and restricted access to financial instruments help explain this negative impact effect at the time of the bequest receipt, illiquidity of inheritances and delays in selling real estate property help rationalize the persistence of the negative effects as the latter might prevent bottom-wealth households from canceling their personal debt, and therefore, improve their net wealth position earlier. The Spanish Inheritance and Gift Tax law contemplates the use of scaling factors depending on the pre-inheritance wealth of heirs. However, these scaling factors have almost always been equal to 1 for close heirs and donees, who represent the majority of taxpayers, and have been barely changed by regional governments in a way to control for pre-inheritance differences in wealth among taxpayers. From a more policy-oriented perspective, investigating how the design of the tax could release the tax burden of liquidity-constraint households by taking into account the pre-inheritance wealth of recipients is in my current research agenda.

Appendix

A Inheritance and Gift Tax in Navarre and Basque Country

The Spanish Constitution passed in 1987 conceded complete fiscal autonomy to Navarre and Basque Country (the *Foral* territories), that is, recognized the legal capacity of these regions to regulate and manage their taxes independently.

Basque Country's fiscal system is composed by three different and independent fiscal authorities, each of them belonging to each provincial government (known as *diputaciones forales*). The *Foral* treasuries of Álava, Bizkaia and Gipuzkoa enjoy a high degree of fiscal regulatory power and are in charge of the collection of their own taxes. The first law regulating the general aspects of the inheritance and gift tax system in Gipuzkoa was introduced in 1987 (Foral norm 5/1987) while Alava and Bizkaia introduced theirs two years later in 1989 (Foral Norm 25/1989 and Foral Norm 2/1989). Navarre's first inheritance and gift tax framework was properly introduced in 2002 (Foral Law 3/2002)

Differently from the rest of the regions, the information about the tax reforms undertaken in Navarre and Basque Country is not included in the regional tax books from the Spanish Ministry of Finance. Therefore, I have relied on the regional fiscal reports provided by the Spanish General Council of Economists and the official tax codes published by the regional governments to collect this information. Table 2 summarizes the years in which the *Foral* territories legislated a tax reform and the corresponding information sources.

Table 2: Tax reforms and data sources

	Year of Implementation	Data Source
Basque Country		
Alava	2012,2014	Spanish Council of General Economists, Foral Norm 18/2011
Bizkaia	2012,2014	Spanish Council of General Economists, Foral Norm 1/2012
Gipuzkoa	2012, 2014	Spanish Council of General Economists Foral Norm 5/2011, Foral Norm 1/2014
Navarra	2018	Spanish Council of General Economists, Foral Norm 16/2017

The inheritance and gift tax legal framework in the Foral territories shares common features with the one in force for the rest of Spanish regions. The tax systems designed by the Basque and Navarre treasuries established 9 and 13 tax brackets[35], respectively, which is a smaller number compared to the national rule, and a different progressive tax schedule depending on the degree of kinship between the heir (grantee) and the deceased

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[35]Alava and Bizkaia have the same tax bracket bounds, which slightly differ from the ones regulated in Gipuzkoa

person (donor)[36]. In general, the progressivity of the tax schedule for more distant heirs in these regions has been higher than the default for the rest of Spain. In contrast, gifts and inheritances of close heirs and donees (spouses and direct ascendants and descendants) have been traditionally subject to a very low tax rate in these regions: they were exempted in the whole Basque country until mid-2012 and subject to a flat rate of 0.8% in Navarre until 2017. In terms of tax deductions and credits, the fiscal authorities in Basque Country have regulated various tax discounts for different groups of heirs and donees. These have been traditionally more generous on average in Gipuzkoa compared to Alava and Bizkaia for more distant heirs (i.e. Gipuzkoa has had in force a tax deduction of 8000 for heirs of group (iv)) but less so for close heirs. Navarre introduced a tax deduction of 250,000 euros for close heirs for the first time in 2018.

B Constructing Regional Average Effective Tax Rates

Using the information on tax regulation changes contained in Tables B.5-B.8, I first apply each household's pre-tax base tb_j the corresponding business assets and main-dwelling specific tax credits and obtain $\hat{b}_j$. Next, I calculate the average effective tax rate corresponding to tax base $\hat{b}_j$ in bracket j in the region r at time t as follows:

$$\bar{\tau}_{jrt}^{E,i} = \left(\frac{q_{jr} + (\bar{tb}_j - td_{jrt}^i - tb_j^{lb}) \times \tau_{jrt}}{\bar{tb}_j - td_{jrt}^i} \right) \times (1 - tc_{jrt}^i) \times SF_{rt} \quad i \in \{\text{H, G}\} \quad j \in \{1,...,16\}$$

where $\bar{tb}_j$ refers to the average tax base in bracket j, tb_j^{lb} denotes the lower bound of tax bracket j, and SF_{rt} refers to the scaling factor which depends on heirs or donees' pre-bequest wealth.

Whenever there is a change in tax regulation in the middle of the year, the average effective tax schedule is computed as a monthly weighted mean. For instance, Galicia introduced a tax credit of 100% for tax bases lower than 125,000 euros as well as simplified the marginal tax for heirs of group (ii) in June 2008. Therefore, the average effective tax rate for heirs of group (ii) in Galicia in the year 2008 is computed as:

$$\bar{\tau}_{i,2008}^{H} = \bar{\tau}_{i,2007}^{H} \times \frac{5}{12} + \tilde{\bar{\tau}}_{i,2008}^{H} \times \frac{7}{12} \quad i \in \{1,...,16\}$$

where $\tilde{\bar{\tau}}_{i,2008}^{H}$ is the average effective tax rate for each bracket i that considers the tax discounts

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[36]The definition of groups of heirs and donees by degree of kinship in these regions also varies with respect to the national law. In Basque Country, group (i) and (ii) include taxpayers qualified as belonging to group (iii) in the national law. The same applies to group (iii) in this region with respect to group (iv) in the national law. Navarre's inheritance and gift tax system does not define groups but directly refers to degrees of kinship

and new tax schedule introduced in June 2008.

A group of regions introduced implicit tax credits by reducing the scaling factors with respect to the default rule. For example, Cantabria reduced the scaling factor (ϕ) for heirs of group (i) and (ii) in 2003 from 1-1.4 to 0.02-0.04, which implied a tax credit ranging between 97% and 99% as computed in de La Fuente et al. (2018). The regions that used the scaling factors as a tool to diminish the tax liabilities of close heirs are gathered in Table B.1 and the corresponding implicit tax credits in Table B.2, respectively. For the regions and years that reduced the scaling factor with respect to the national rule, I use the average implicit tax credit.

Table B.1: Reduction in the scaling factor - Regions

Region	Group	Default ϕ	New ϕ	Years in force
Cantabria	(i),(ii)	1-1.2	0.01-0.04	2003-2009
Asturias	(i)	1-1.2	0.01-0.04	2004-2018
Galicia	(i)	1-1.2	0.01-0.04	2004-2008

Table B.2: Reduction in the scaling factor and Implicit Tax Credit - Groups (i) and (ii)

Pre-inheritance wealth	Change SF	Default SF	Implicit tax credit
0-400k	0.01	1	99.00%
400k-2M	0.02	1.05	98.10%
2M-4M	0.03	1.10	97.27%
> 4M	0.04	1.20	96.67%
Average			97.76%

Finally, some regions introduced tax credits that applied to a specific group of taxpayers within a group. In these particular cases, I follow de La Fuente et al. (2018) and compute the average tax credit taking into account the weight of each group of taxpayers in the tax base of the region. For example, Catalonia in 2014 regulated an unconditional tax credit of 99% for spouses while introducing a progressive tax credit for ascendants and descendants:

Table B.3: Tax Credit for Ascendants and Descendants - Catalonia 2014

	Tax credit	Weight Taxpayers*	Average Tax Credit
< 100k	99%	16.91%	16.74%
100-200k	98%	16.33%	16.00%
200-300k	97%	9.73%	9.44%
300-500k	94.20%	12.19%	11.49%
500-750k	89.47%	10.81%	9.67%
750k-1M	84.60%	8.33%	7.05%
1-1.5M	76.40%	6.17%	4.72%
1.5-2M	69.8%	6.17%	4.31%
2-2.5M	63.84%	6.17%	3.94%
2.5-3M	55.37%	6.17%	3.54%
> 3M	30%	1%	0.30%
Average			70,46%

*These weights are taken from a report of Grupo de Trabajo sobre Imposición Patrimonial de la Comisión Mixta de Coordinación de la Gestión Tributaria (CMCGT, 2007). See de La Fuente et al. (2018) for more details

Table B.4: Taxpayers weights, heirs group (ii) - Catalonia 2014

	Weight Tax Payers*
Spouses	23.42%
Ascendants, descendants	76.58%

*These weights are taken from a report of Grupo de Trabajo sobre Imposición Patrimonial de la Comisión Mixta de Coordinación de la Gestión Tributaria (CMCGT, 2007). See de La Fuente et al. (2018) for more details

The average net tax rate for heirs of group (ii) would be computed as:

$$\bar{\tau}_{i,2,2014}^{H} = \bar{\tau}_{i,2,2014}^{H,Default} \times \underbrace{(1-0.99)}_{\text{spouses' tax credit}} \times \underbrace{0.2342}_{\text{spouses' weight}} + \bar{\tau}_{i,2,2014}^{H,Default} \times \underbrace{(1-0.7046)}_{\text{others' tax credit}} \times \underbrace{0.7658}_{\text{others' weight}} \qquad \forall i$$

Table B.5: Tax Credits and Deductions for Heirs - Group (ii)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Andalucia			td 100% if tb<125k				td 100% if tb<175k		
Aragon							td 100% max 150k		
Asturias						tc 100% if tb<125k tc such that $\tau = 1\%$			tc 100% if tb<150k
Balearic Islands				td 25k					
Canary Islands				td 18.5k	tc 99.9%				
Cantabria		tc 97-99%*							tc 90-99%
Castile and Leon				td 30k	td 60k	tc 99%			
Castile la Mancha							tc 95%		
Catalonia	td 18k								td 150-500k tc 25%,50% + own τ
Valencian Community				td 25k	td 40k	tc 99%			
Extremadure									
Galicia							0/ tc 100% if tb<125k + own τ	tc 100% if tb<125k + own τ	
Madrid				td 50k tc 25% if tb<300k	td 100k tc 50% if tb<300k	tc 99%			
Murcia						tc 99%	tc 99% max 450k		
Navarre						if tb<450k			
Basque Country									
La Rioja			tc 99%						
Ceuta and Melilla									

td = tax deduction; tc = tax credit; tb = tax base; own τ = regional tax schedule; *Implicit tax credit. The information on tax reforms has been retrieved from the regional tax books from the Spanish Ministry of Finance and from the regional fiscal reports produced by the General Council of Spanish Economists

Table B.6: Tax Credits and Deductions for Heirs - Group (ii)

	2011	2012	2013	2014	2015	2016	2017	2018	2019
Andalucia							td 100% if tb<250k max 200K if 250k<tb<350k	td 100% max 1M	td 100% max 1M / tc 99%
Aragon		tc 20% or td 100% max 150k	tc 33% or td 100% max 150k	tc 50% or td 100% max 150k	tc 65% or td 100% max 150k	td 100% max 150k		td 100k max 500k	
Asturias							tc 100% if tb<200k / tb<300k + own τ	tb<300k + own τ	
Balearic Islands						td 25k + own τ			
Canary Islands		tc 99% / td 20-40k	td 20-40k			tc 99%			
Cantabria		tc 99%						td 50k / tc 100% if tb<100k / tc 90% if tb>100k	tc 100%
Castile and Leon			td 175k			td 175k/ td 250k tc 95% / tc 80-100%	td 250k/ td 300k tc 80-100%	td 400k	
Castile la Mancha									
Catalonia	tc 99% + own τ		tc 99%/ td 100k + tc 75%	tc 99% / td 50-100k + tc 20-99%; 99% if spouse + own τ	td 50-100k + tc 20-99%; 99% if spouse + own τ				
Valencian Community				td 100k + tc 75%			td 100k + tc 50%		
Extremadura	td 100% max 175k if inher<600k				tc 90-99% if tb<600k			tc 99%	
Galicia						td 400k + own τ			
Madrid									
Murcia		tc 99% max 450k/ tc 99% if tb <300k		default/ tc 50%	tc 50%	tc 60%	tc 99%		
Navarre								td 250k spouse + own τ	
Basque Country		exempt/ td 400k, 220k + own τ	td 400k, 220k + own τ*		td 400k + own τ				
La Rioja						tc 98%-99%			
Ceuta and Melilla									

td = tax deduction; tc = tax credit; tb = tax base; own τ = regional tax schedule; *400K in Alava and Bizkaia, 220k in Gipuzkoa

Table B.7: Tax Credits and Deductions for donees - Group (i) and (ii)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Andalucia									
Aragon								tc 100% if tb<300k	
Asturias									
Balearic Islands						td such that net τ = 7%			
Canary Islands							**tc 99.9%**		
Cantabria									
Castile and Leon							**tc 99%**		
Castile la Mancha							**tc 95%**		
Catalonia								own τ	
Valencian Community					**td 40k g (ii)** tc 99% if tb<420k g (i)	tc 99% if tb<420k g (ii)			
Extremadure									
Galicia								own τ	
Madrid					**tc 99%**				
Murcia									
Navarre									
Basque Country									
La Rioja									
Ceuta and Melilla									

td = tax deduction; tc = tax credit; tb = tax base; own τ = regional tax schedule. The tax discounts in bold are the ones that coincided with the ones introduced for heirs of group (ii). The information on tax reforms has been retrieved from the regional tax books from the Spanish Ministry of Finance and from the regional fiscal reports produced by the General Council of Spanish Economists

Table B.8: Tax Credits and Deductions for donees - Group (i) and (ii)

	2011	2012	2013	2014	2015	2016	2017	2018	2019
Andalucia									
Aragon				tc 50%	tc 65%	tc 65% if tb<75k			
Asturias									
Balearic Islands									
Canary Islands			default			**tc 99.9%**			
Cantabria									**tc 100%**
Castile and Leon			default						
Castile la Mancha							tc 95% if tb<120k tc 90% if tb 120-240k tc 85% if tb>240k		
Catalonia				tc 75 % if tb<150k					
Valencian Community									
Extremadure									
Galicia									
Madrid									
Murcia							tc 60%	**tc 99%** td 250k spouse + own τ	
Navarre					td 400k + own τ				
Basque Country		exempt/ td 400k, 220k + own τ	td 400k, 220k + own τ						
La Rioja									**tc 99% if tb<500k** **tc 98% if tb>500k**
Ceuta and Melilla									

td = tax deduction; tc = tax credit; tb = tax base; own τ = regional tax schedule. The tax discounts in bold are the same ones for heirs of group (ii). The information on tax reforms has been retrieved from the regional tax books from the Spanish Ministry of Finance and from the regional fiscal reports produced by the General Council of Spanish Economists

C   Additional Figures and Tables

Figure C.1: Number of Inheritance and Gift Tax Reforms by Year - Group (ii)
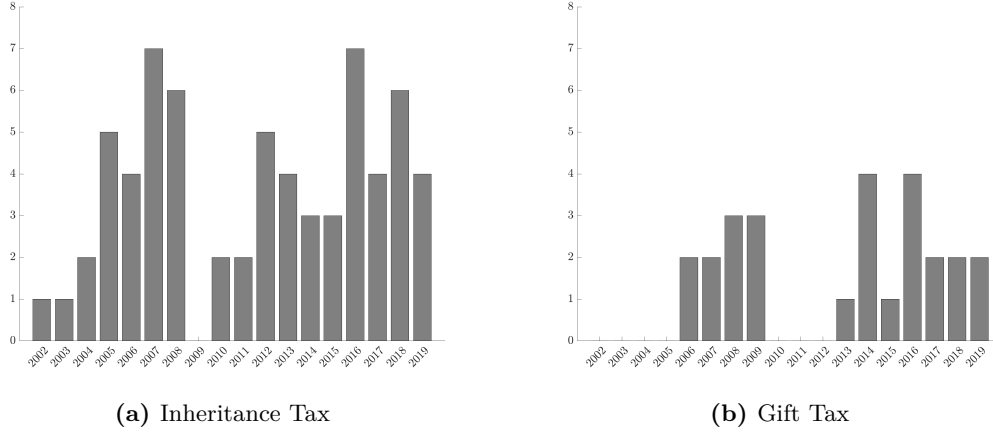
(a) Inheritance Tax

(b) Gift Tax

Figure C.2: Regional Inheritance Tax Reforms by Type - Group (ii)

(a) Introduce tax discounts

(b) Repeal/decrease past tax discounts

This figure depicts the years for which each Spanish region introduced a different inheritance tax credit or/and tax deduction for heirs of group (ii) (i.e descendants older than 21, ascendants and spouses). Panel C.2a presents those tax changes that implied the introduction of an actual tax credit/deduction by region and year while Panel C.2a shows those changes that involved a large reduction in past tax discounts or their repeal. These figures have been constructed using the inheritance tax regulation contained in the regional tax books published by the Spanish Ministry of Finance and in the regional fiscal reports produced by the General Council of Spanish Economists.

Figure C.3: Regional Gift Tax Reforms by Type - Group (ii)
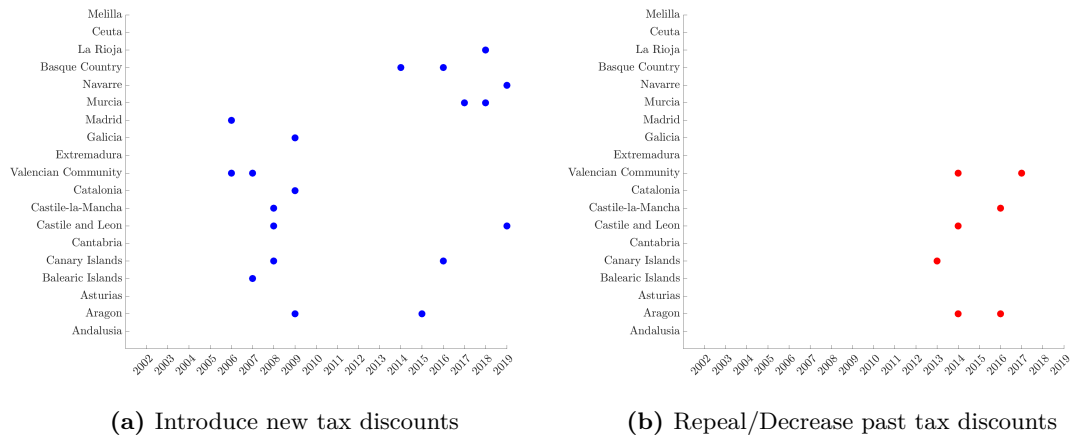
(a) Introduce new tax discounts

(b) Repeal/Decrease past tax discounts

This figure depicts the years for which each Spanish region introduced a different inheritance tax credit or/and tax deduction for donees of (ii) (i.e ascendants, descendants older than 21 and spouses). Panel C.3a presents those tax changes that implied the introduction of an actual tax credit/deduction by region and year while Panel C.3a shows those changes that involved a large reduction in past tax discounts or their repeal. These figures have been constructed using the inheritance tax regulation contained in the regional tax books published by the Spanish Ministry of Finance and in the regional fiscal reports produced by the General Council of Spanish Economists.

Figure C.4: Average Effective Inheritance Tax Rate across Regions - Group (ii)

(a) Bottom Tax Brackets

(b) Bottom-middle Tax Brackets

(c) Middle-top Tax Brackets

(d) Top Tax Brackets
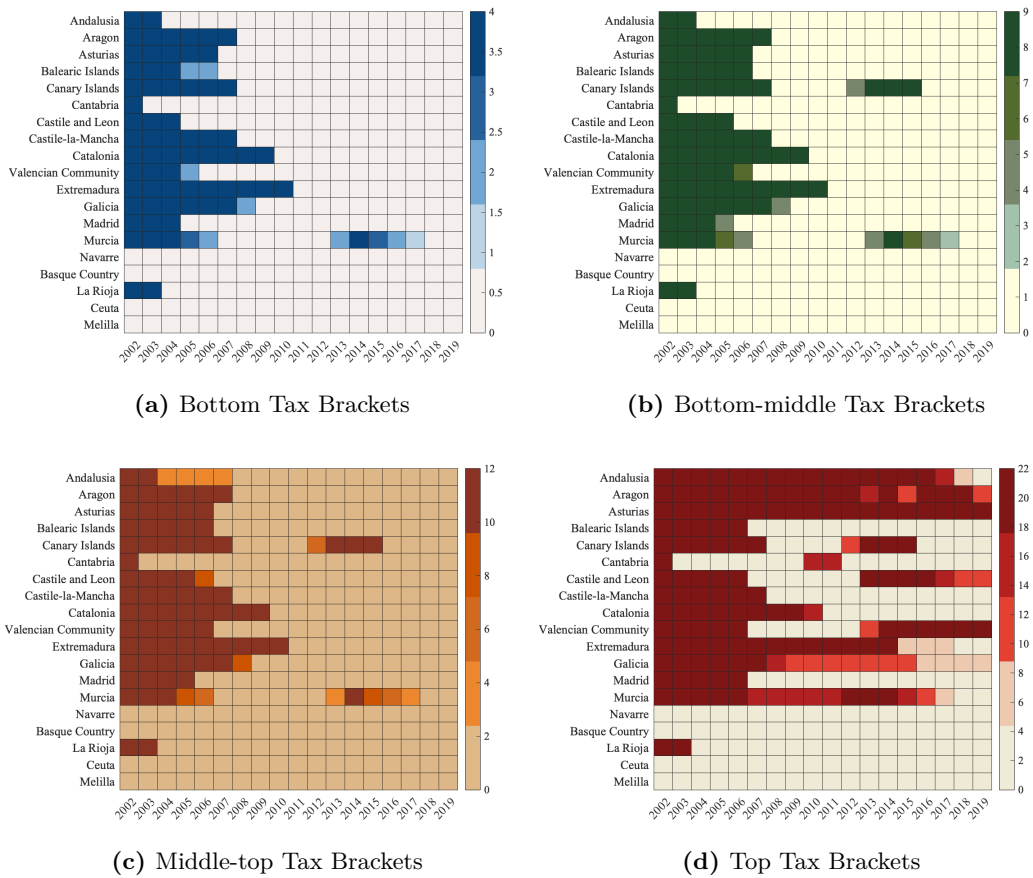
This figure depicts the average effective inheritance tax rate by bracket for group (ii) in all Spanish regions in 2013. *Bottom brackets* range from 0 to 32,000 euros, *bottom-middle brackets* from 32000 to 64000 euros, *middle-top brackets* from 64000 to 160,000 euros and *top brackets* from 160,000 euros on

Figure C.5: Average Effective Gift Tax Rate across Regions - Group (ii)

(a) Bottom Tax Brackets

(b) Bottom-middle Tax Brackets

(c) Middle-top Tax Brackets

(d) Top Tax Brackets
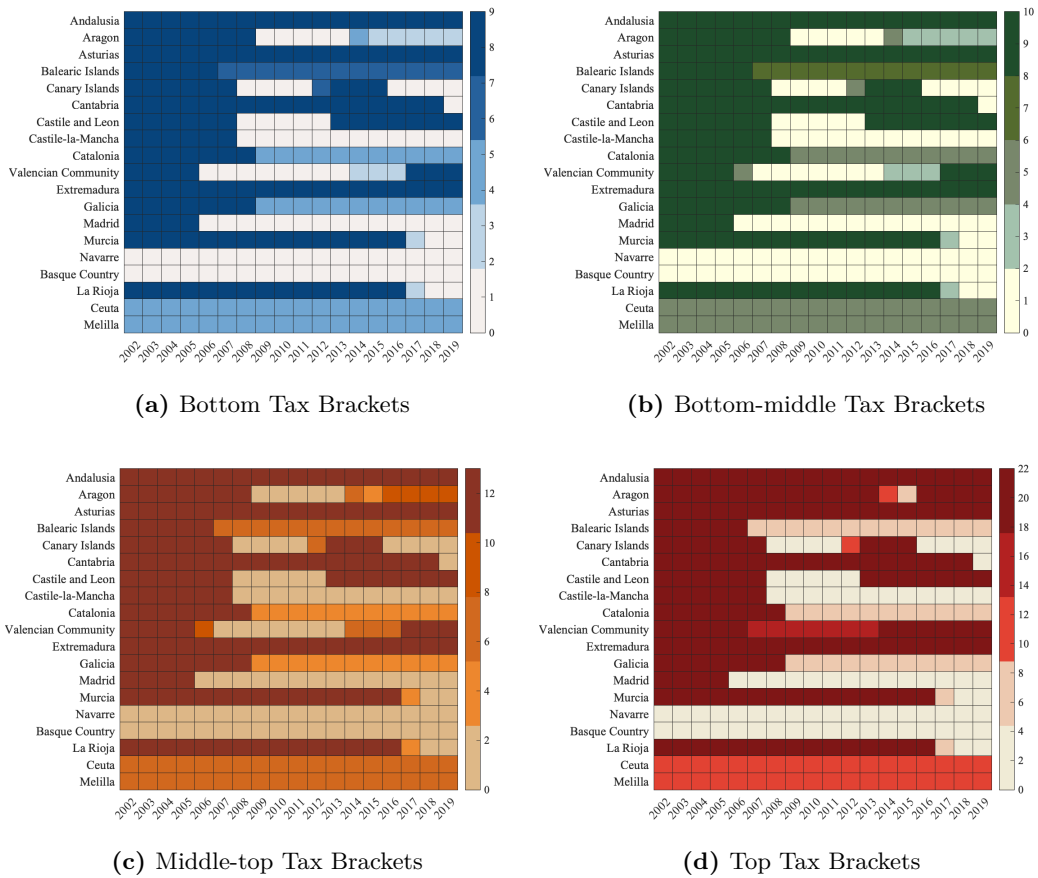
This figure depicts the average effective gift tax rate by bracket for group (ii) in all Spanish regions. *Bottom brackets* range from 0 to 32,000 euros, *bottom-middle brackets* from 32000 to 64000 euros, *middle-top brackets* from 64000 to 160,000 euros and *top brackets* from 160,000 euros on

Figure C.6: Regional Heterogeneity in Tax-induced Time Restrictions to Sell The Inherited Main Dwelling
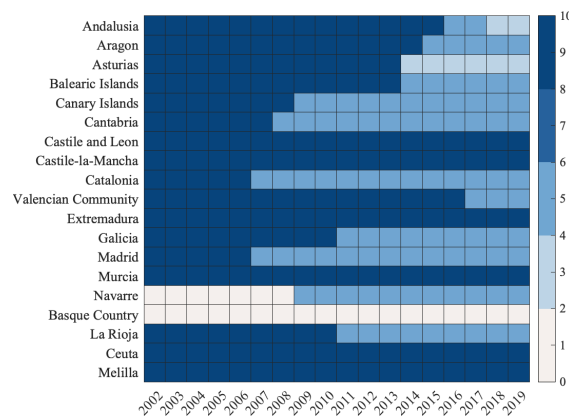
This heatmap shows the heterogeneity in the number of mandatory years that heirs need to keep the inherited main dwelling of the deceased person to avoid giving back to the Treasury the fiscal benefits applicable to this asset.

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Table C.1: Average Variation in Inheritance and Gift Tax - Group (ii)

	Avg. Var.	Median Var.	Std. Dev	Average Rate in 2002
Inheritance Tax	-0.46	-0.59	0.02	9.10%
Bottom Tax Brackets	-0.18	-0.23	0.01	3.12%
Bottom-middle Tax Brackets	-0.41	-0.52	0.02	7.11%
Middle-top Tax Brackets	-0.51	-0.66	0.02	9.00%
Top Tax Brackets	-0,76	-1.05	0.04	17.15%
Gift Tax	-0.32	0.00	0.02	10.98%
Bottom Tax Brackets	-0.20	0.00	0.02	6.92%
Bottom-middle Tax Brackets	-0.27	0.00	0.02	8.64%
Middle-top Tax Brackets	-0.30	0.00	0.02	10.23%
Top Tax Brackets	-0.53	0.00	0.04	18.49%

Table C.2: Regional Inheritance and Gift Taxation and Macroeconomic Aggregates

	(1) ATR Inheritance	(2) ATR Gift
GDP pc$_{t-1}$	-0.000	0.000
	(0.000)	(0.000)
UR$_{t-1}$	-0.003	-0.001
	(0.003)	(0.001)
CPI$_{t-1}$	-0.015	-0.006
	(0.014)	(0.009)
GDP pc$_{t-2}$	0.000	-0.000
	(0.000)	(0.000)
UR$_{t-2}$	0.001	0.000
	(0.001)	(0.001)
CPI$_{t-2}$	0.015	0.005
	(0.009)	(0.009)
Region FE	Yes	Yes
Year FE	Yes	Yes
Observations	272	272

Table C.3: Regional Inheritance and Gift Taxation and Regional Public Finances

	(1) Public Expenditure pc	(2) Public Expenditure pc	(1) Debt-to-GDP	(2) Debt-to-GDP
ATR Inheritance	0.183		-6.435	
	(0.124)		(10.836)	
ATR Gift		0.204		-1.829
		(0.151)		(14.074)
Region FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	170	170	272	272

Public Expendiure pc refers to regional public expenditure in health, education and social protection per capita. Data series have been retrieved from IVIE.

Table C.4: Regional Inheritance and Gift Taxation and Political Orientation

	ATR Inheritance	ATR Gift	ATR Inheritance	ATR Gift
Right-wing party (dummy)	-0.020*	-0.022***	-0.024**	-0.024***
	(0.011)	(0.007)	(0.011)	(0.008)
Region FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Macroeconomic Controls	No	No	Yes	Yes
Observations	323	323	255	255

Right-wing government takes value equal to 1 if regional government is conformed by a right-win party or a right-win coalition. Macroeconomic controls are one-year lagged values of unemployment rate, GDP per capita and debt-to-GDP ratios. Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table C.5: Regional Macroeconomic Aggregates and Political Orientation

	GDP pc	Unemployment Rate	Debt (% GDP)
Right-wing party (dummy)	0.006	0.840	-0.278
	(0.008)	(0.592)	(1.658)
Region FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	323	323	289

Right-wing government takes value equal to 1 if regional government is conformed by a right-wing party or a right-wing coalition.

D Summary Statistics

Table D.1: Household Summary Statistics at the time of the Inheritance or Gift

	Mean	sd	Min	Max	N
			Households below p40		
Net Wealth	55.41	52.98	-71.60	169.59	106
Mortgage Debt (%Wealth)	28.04	42.26	0.00	157.88	106
Non-mortgage Debt (%Wealth)	7.25	17.11	0.00	126.16	106
Personal Credit Debt (%Wealth)	7.49	17.63	0.00	126.16	106
			Households p40-p60		
Net Wealth	158.08	47.66	91.84	276.47	68
Mortgage Debt (% Wealth)	8.49	13.14	0.00	58.16	68
Non-mortgage Debt (% Wealth)	0.96	3.23	0.00	23.54	68
Personal Credit Debt (% Wealth)	0.96	3.23	0.00	23.54	68
			Households p60-p80		
Net Wealth	271.96	60.40	155.52	407.41	107
Mortgage Debt (% Wealth)	5.00	9.84	0.00	53.45	107
Non-mortgage Debt (% Wealth)	0.77	2.61	0.00	16.75	107
Personal Credit Debt (% Wealth)	0.78	2.68	0.00	33.21	107
			Households p80-p90		
Net Wealth	471.67	74.46	306.99	660.02	67
Mortgage Debt (% Wealth)	5.68	9.62	0.00	41.24	67
Non-mortgage Debt (% Wealth)	0.27	0.86	0.00	4.51	67
Personal Credit Debt (% Wealth)	0.31	0.91	0.00	4.51	67
			Households p90-p100		
Net Wealth	1170.43	3197.03	465.75	194519.11	232
Mortgage Debt (% Wealth)	3.73	6.92	0.00	42.55	232
Non-mortgage Debt (% Wealth)	0.34	1.70	0.00	14.82	232
Personal Credit Debt (% Wealth)	0.36	1.82	0.00	21.02	232

Monetary amounts are expressed in thousands and have been CPI-adjusted to the year 2016. EFF survey weights are applied to obtain representative averages of the Spanish population.

Table D.2: Share of Inheritance and Gifts by Net Wealth Percentiles

	% Gifts (cash transfers)	% Inheritances	Total
Households < p40	56%	44%	100%
Households p40-p60	52%	45%	100%
Households p60-p80	53%	47%	100%
Households p80-p90	45%	55%	100%
Households p90-p100	43%	57%	100%

Figure D.1: Asset Composition of Bequests Along the Wealth Distribution
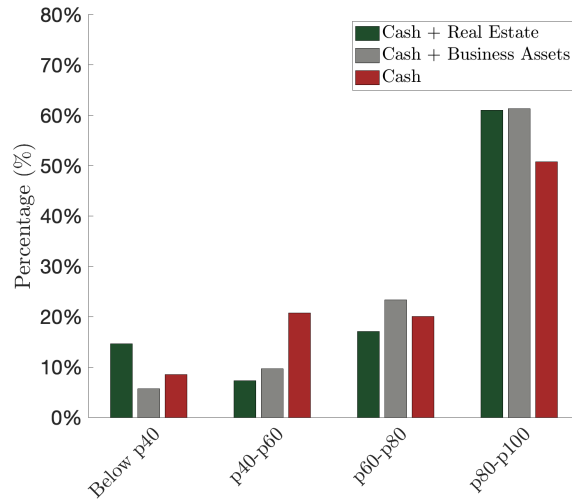
This figure shows the proportion of bequests received by asset composition along the net wealth distribution. All color bars sum 100%. EFF survey weights are applied to obtain representative averages of the Spanish population

E   Results

Table E.1: Event-study Estimates of Inheritance Taxes on Wealth Mobility

	(1)	(2)	(3)	(4)	(5)
	Probability of moving upwards from				
	10th percentile	20th percentile	30th percentile	40th percentile	50th percentile
$t = -3$	0.000	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
$t = -2$	0.000	0.000	0.000	0.000	0.000
	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
$t = 0$	-0.001**	-0.001**	-0.001	-0.002	-0.001
	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)
$t = 1$	-0.002**	-0.001**	-0.001	-0.002	-0.001*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
$t = 2$	-0.002**	-0.002*	-0.002	-0.002**	-0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
	Change in outcome %				
$t = 0$	-35,50	-6,63	-4,32	-27,14	-17,54
$t = 1$	-50,11	-9,50	-6,40	-32,36	-19,58
$t = 2$	-76,91	-16,06	-13,22	-40,37	-56,69
Mean $t - 1$ (%)	0.287	1.494	1.437	0.575	0.587
Obs.	887	887	887	887	887

This table presents the estimated coefficients from the event-study specification given by Equation 1 using the average bracket-specific inheritance tax rate as the independent variable. The dependent variable for columns (1)-(5) is the probability of moving upwards in the net wealth distribution conditional on being at the -th percentile at the time of the inheritance tax payment. Standard errors are robust and clustered at the region-bracket level. Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table E.2: Event-study Estimates of Inheritance Taxes on Household Wealth and Debt - Households below 40th percentile before the tax payment

	(1)	(2)	(3)	(4)	(5)	(6)
	Gross Wealth	Housing Wealth	Financial Wealth	Total Debt	Mortgage Debt	Personal Credit Debt
$t = -3$	0.015	0.014	0.011	-1.350	-1.022	-0.893
	(0.105)	(0.102)	(0.095)	(1.44)	(1.08)	(1.22)
$t = -2$	0.019	-0.030	-0.090	-2.171	-2.353	-2.824
	(0.109)	(0.115)	(0.108)	(2.148)	(2.160)	(2.160)
$t = 0$	-0.089*	0.082	-0.194***	1.780	-3.587	3.263*
	(0.049)	(0.111)	(0.086)	(2.947)	(3.001)	(1.800)
$t = 1$	-0.109*	0.033	-0.225***	3.686	-3.193	4.759*
	(0.059)	(0.135)	(0.077)	(3.984)	(2.279)	(2.580)
$t = 2$	-0.122	0.024	-0.250 ***	6.770	-3.154	7.152
	(0.071)	(0.154)	(0.095)	(4.780)	(2.592)	(4.876)
			Change in outcome %			
$t = 0$	-0.783	1.011	-1.771	1.165	-6.049	3.911
$t = 1$	-0.955	0.379	-2.048	2.412	-5.384	5.703
$t = 2$	-1.074	0.253	-2.282	4.430	-5.319	8.571
Mean $t - 1$	11.388	7.910	10.978	152.810	59.300	83.400
Obs	201	201	201	201	201	201

This table presents the estimated coefficients from the event-study specification given by Equation 1 using the average bracket-specific inheritance tax rate as the independent variable. The dependent variable for columns (1)-(3) is (logged) gross wealth, housing, and financial wealth and for columns (4)-(6) is total debt, mortgage debt, and personal credit debt as a percentage of total gross wealth. Standard errors are robust and clustered at the region-bracket level. Significance * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure E.1: Effect of Inheritance Taxes on Bottom-wealth Households' Financial Wealth and Other Non-mortgage debt
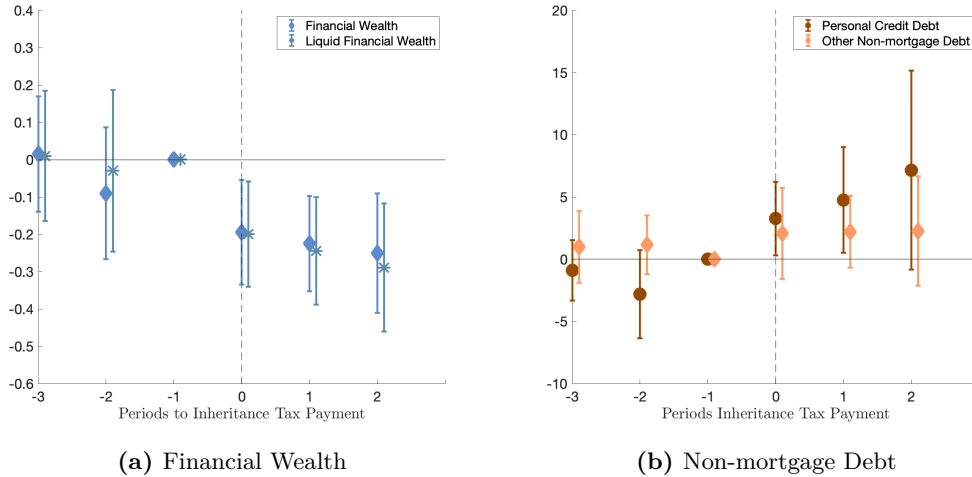
(a) Financial Wealth

(b) Non-mortgage Debt

This figure plots the event study estimates ($\hat{\beta}_k$) and corresponding 90 percent confidence bands of the specification of Equation 1. Liquid assets in Panel E.1a refer to bank deposits and saving accounts holdings. Other non-mortgage debt in Panel E.1b refers to total debt in credit lines, current account overdrafts, advances, and loans from friends or family. Standard errors are robust and clustered at the region-bracket level.

F   Robustness

Table F.1: Inheritance Taxes and Debt Holdings of Old Households

| | Age $\geq$ 70, All | | Age $\geq$ 70, Below p40 | |
	Total debt	Personal credit debt	Total debt	Personal credit debt
ATR Inheritance	-0.013	-0.019	0.052	0.015
	0.054	0.048	0.419	0.424
Time FE	Yes	Yes	Yes	Yes
Region FE	Yes	Ye	Yes	Yes
Observations	4799	4799	1085	1085

The dependent variable is either total debt-to-wealth ratio or personal credit debt-to-wealth ratio. The sample includes households that have not reported any inheritance or gift in any survey wave between 2002 and 2018.

Table F.2: Age profile of heirs

	Average Age	Heirs $\leq$ 40 years old (% Total heirs)
Below p40	49	22.5%
p40-p60	54	14.3%
p60-p80	51	15.6%
p80-p90	56	2.85%
p90-p100	57	0.80%

The average age of heirs is computed at the time of the wealth transfer receipt. For households consisting of couples, the average age of both spouses is used. EFF survey weights are applied to obtain representative averages of the Spanish population.

Figure F.1: Cash transfers as Inheritances
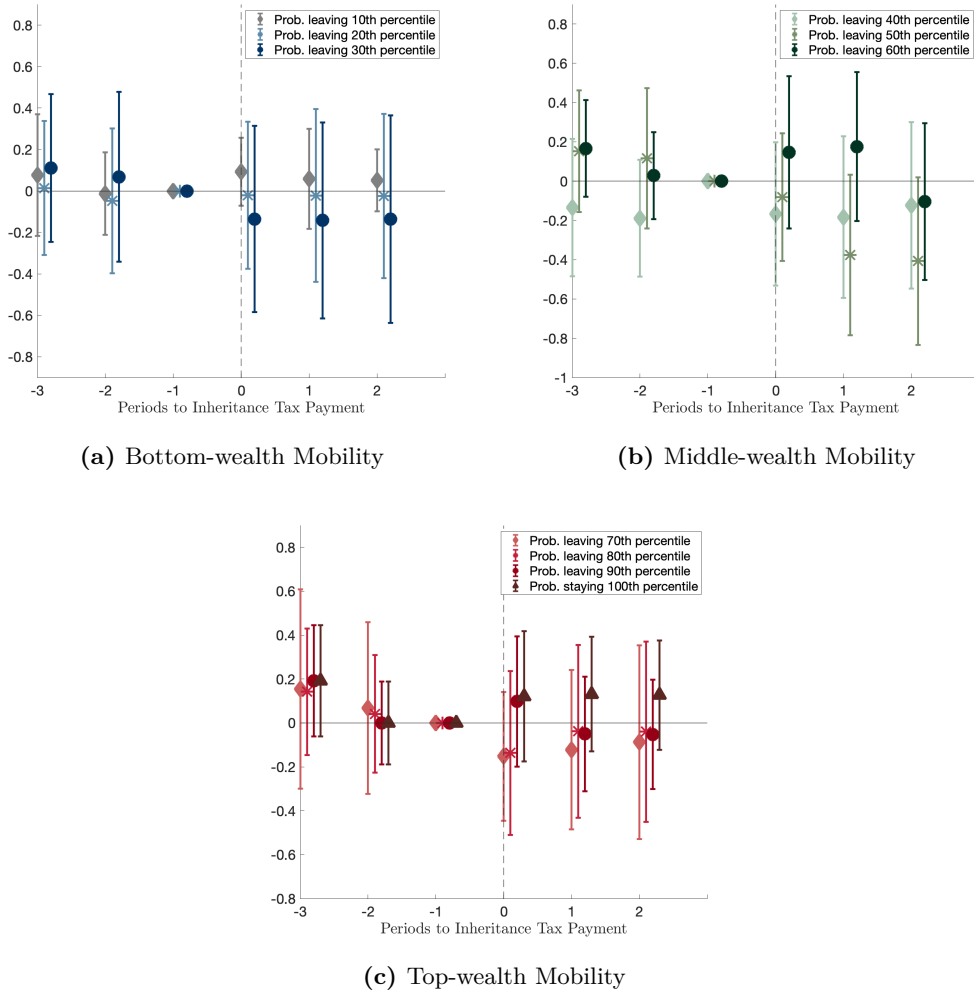
(a) Bottom-wealth Mobility

(b) Middle-wealth Mobility

(c) Top-wealth Mobility

This figure plots the event study estimates $(\hat{\beta}_k)$ and corresponding 90 percent confidence bands of the specification of Equation 1. The treatment variable is the average bracket-specific effective tax rate. Cash transfers are assumed to be inheritances. Standard errors are robust and clustered at the region-bracket level.

Figure F.2: Effects of Inheritance Taxes on Wealth mobility - Alternative definition of treatment
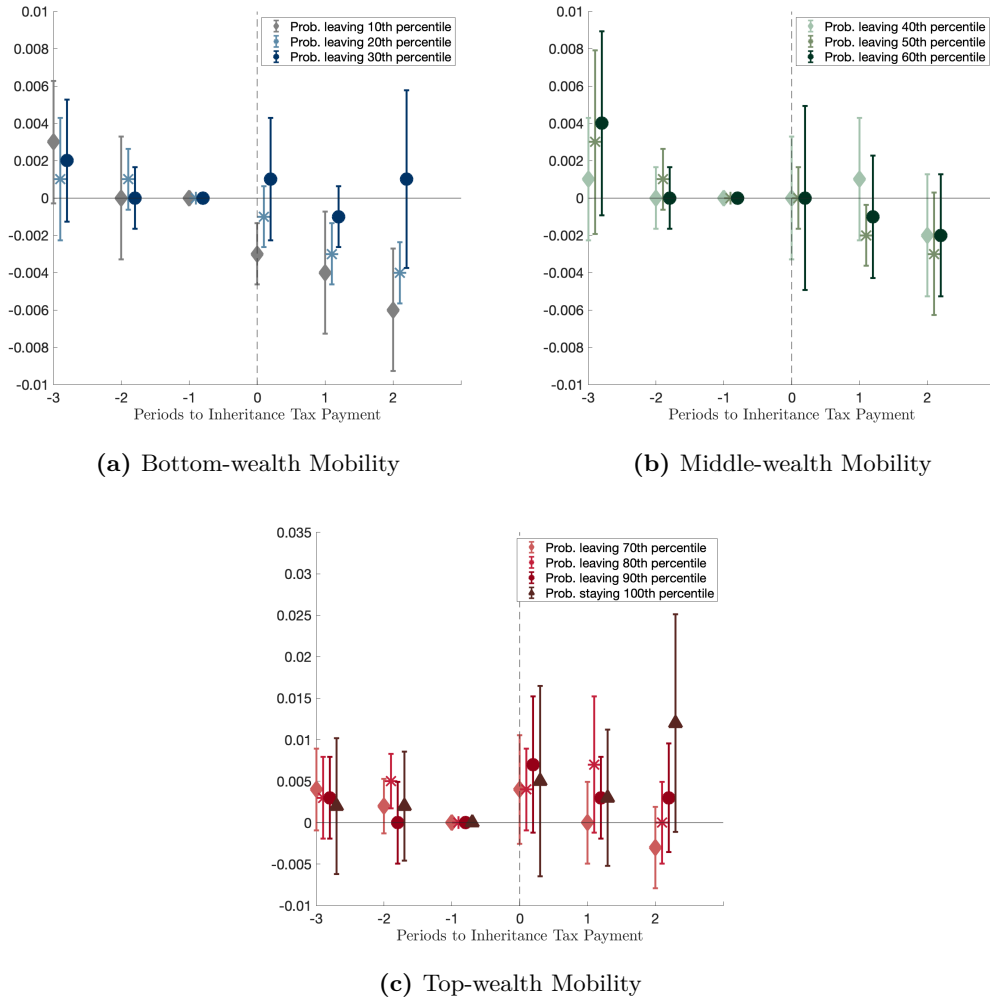
(a) Bottom-wealth Mobility

(b) Middle-wealth Mobility

(c) Top-wealth Mobility

This figure plots the event study estimates ($\hat{\beta}_k$) and corresponding 90 percent confidence bands of the specification of Equation 1. The treatment variable is log of net-of-tax inheritance value. Standard errors are robust and clustered at the region-bracket level. Only heirs are included in the sample

Figure F.3: Effect of Inheritance Taxes on Household Wealth and Debt - Alternative definition of treatment
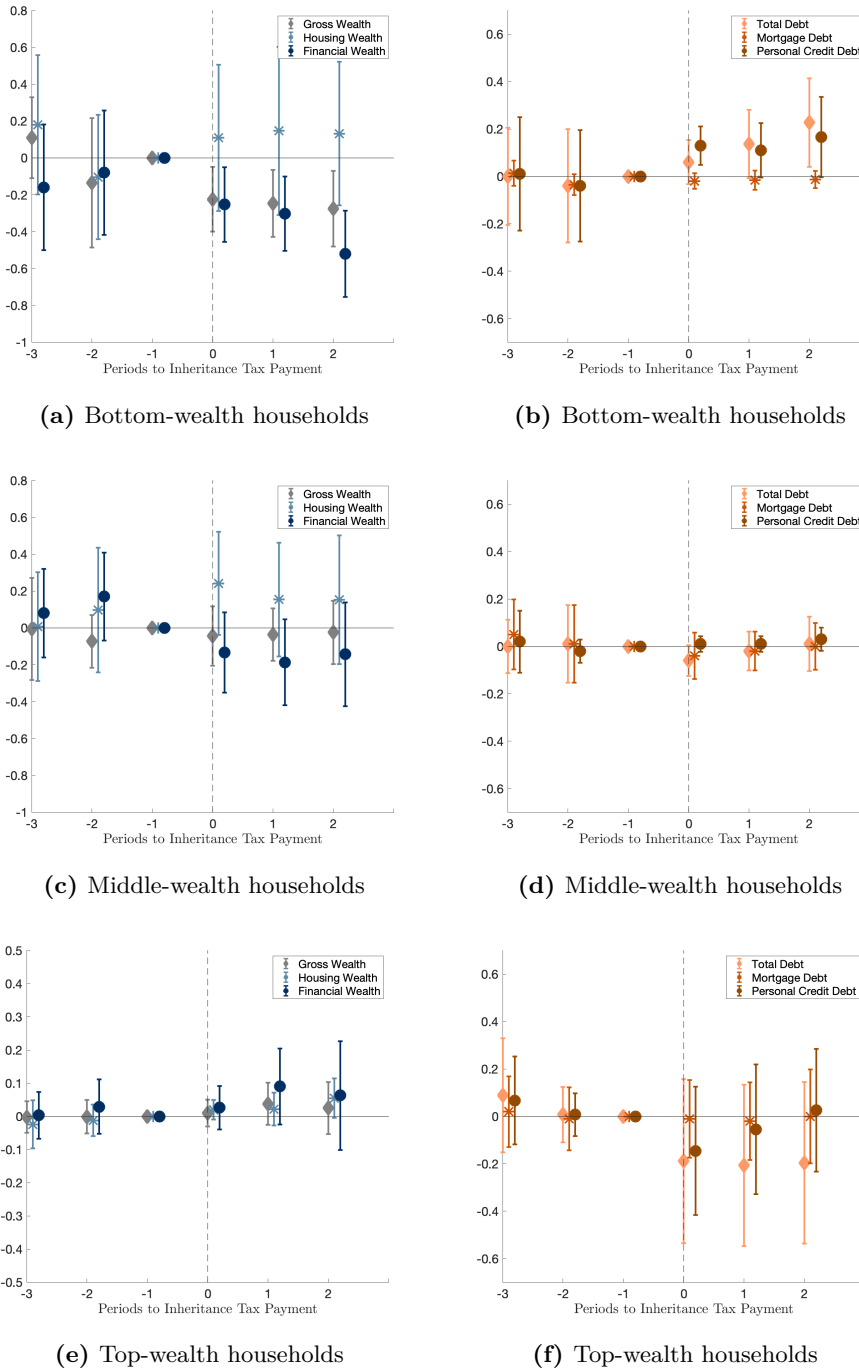
(a) Bottom-wealth households

(b) Bottom-wealth households

(c) Middle-wealth households

(d) Middle-wealth households

(e) Top-wealth households

(f) Top-wealth households

This figure plots the event study estimates $(\hat{\beta}_k)$ and corresponding 90 percent confidence bands of the specification of Equation 1. Bottom-wealth households are between the 10th-40th percentile of the net wealth distribution, middle-wealth are those between the 40th-70th percentiles and top-wealth are those above the 70th percentile at the time of the inheritance receipt. The dependent variable in Panels F.3a-F.3e is (logged) gross wealth, financial wealth, or housing wealth. The dependent variable in Panels F.3b-F.3f total debt-to-wealth ratio, mortgage debt-to-wealth ratio, or personal credit debt-to-wealth ratio in percent. Financial wealth includes bank deposits, stocks, mutual funds, pension plans, and life insurance. Housing wealth includes real estate property. The treatment variable is log of net-of-tax inheritance value. Standard errors are robust and clustered at the region-bracket level. The sample includes only heirs

Figure F.4: Correlation between Average Effective Inheritance Tax Rate and Rejected Inheritances Rate

(a) Bottom-brackets Average Tax Rate

(b) Top-brackets Average Tax Rate
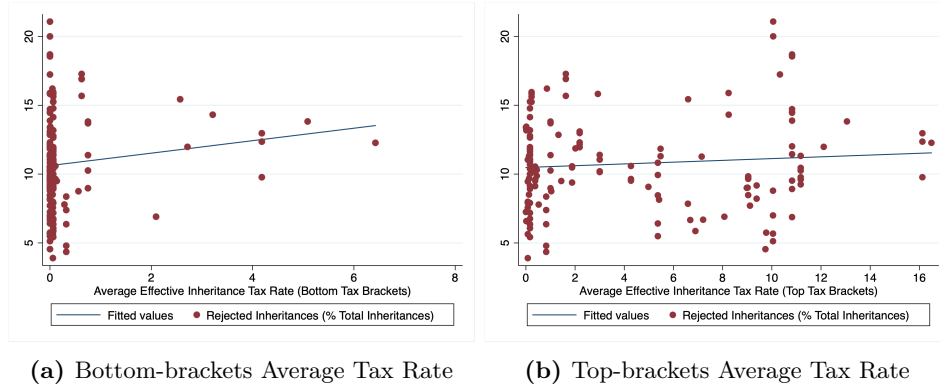
This figure plots the correlation between the regional average effective tax rate for bottom tax brackets (inheritances below 72,000 euros) or for top tax brackets (inheritances above 72,000 euros) and the rejection rate. The rejection rate has been computed using data on the number of official inheritances declarations and the number of rejected inheritances at the regional level from *Consejo General del Notariado*.

Online Appendix

Figure OA.1: Regional Inheritance and Gift Tax Reforms - Group (i)
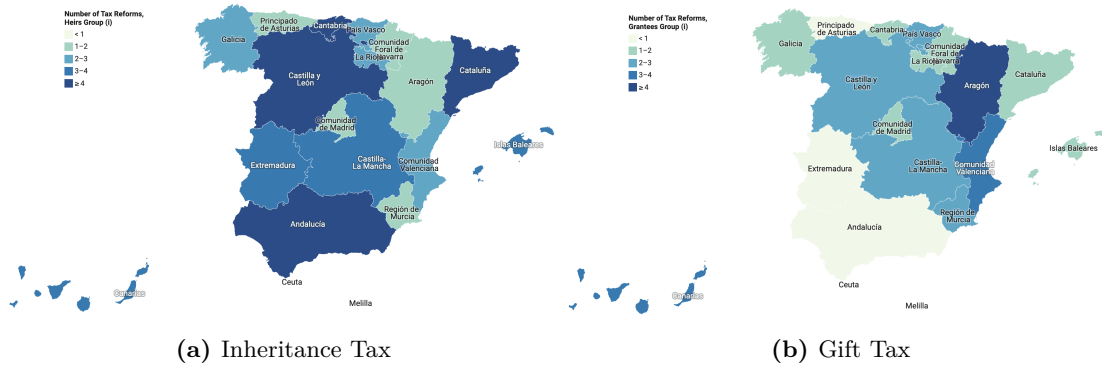
(a) Inheritance Tax

(b) Gift Tax

This figure depicts the number of different tax reforms for heirs and donees of group (i) (i.e. descendant younger than 21) introduced by each Spanish regions. Panel OA.1a refers to the inheritance tax while Panel OA.1b refers to the gift tax. These figures have been constructed using the inheritance tax regulation contained in the regional tax books published by the Spanish Ministry of Finance and in the regional fiscal reports produced by the General Council of Spanish Economists.

Figure OA.2: Regional Inheritance Tax Reforms - Group (iii)-(iv)
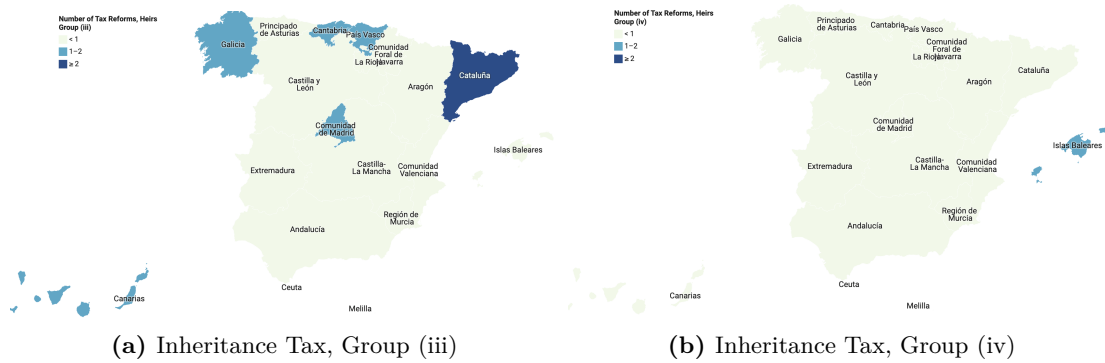
(a) Inheritance Tax, Group (iii)

(b) Inheritance Tax, Group (iv)

This figure depicts the number of different tax reforms for heirs of group (iii) (i.e siblings, stepchildren, aunts/uncles and nephews/nieces) and (iv) (i.e other distant relatives and non-relatives) introduced by each Spanish region. The change in tax regulation in Basque Country refers only to Bizkaia. This figure has been constructed using the inheritance tax regulation contained in the regional tax books published by the Spanish Ministry of Finance and in the regional fiscal reports produced by the General Council of Spanish Economists.

Figure OA.3: Regional Inheritance Tax Reforms by Type - Group (i)
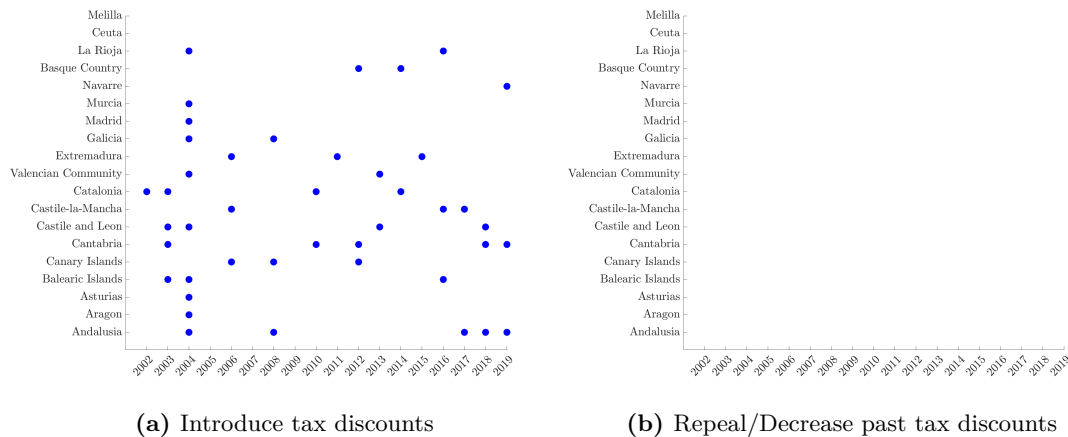
(a) Introduce tax discounts

(b) Repeal/Decrease past tax discounts

This figure depicts the years for which each Spanish region introduced a different inheritance tax credit or/and tax deduction for donees of group (i) (i.e descendants younger than 21). Panel OA.3a presents those tax changes that implied the introduction of an actual tax credit/deduction by region and year while Panel OA.3a shows those changes that involved a large reduction in past tax discounts or their repeal. These figures have been constructed using the inheritance tax regulation contained in the regional tax books published by the Spanish Ministry of Finance and in the regional fiscal reports produced by the General Council of Spanish Economists.

Figure OA.4: Regional Gift Tax Reforms by Type - Group (i)
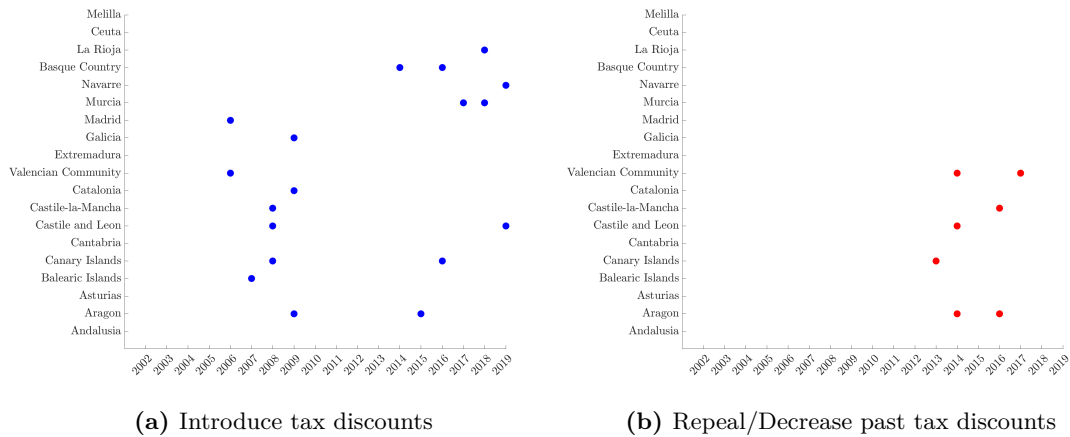
(a) Introduce tax discounts

(b) Repeal/Decrease past tax discounts

This figure depicts the years for which each Spanish region introduced a different inheritance tax credit or/and tax deduction for donees of group (i) (i.e descendants younger than 21). Panel OA.4a presents those tax changes that implied the introduction of an actual tax credit/deduction by region and year while Panel OA.4a shows those changes that involved a large reduction in past tax discounts or their repeal. These figures have been constructed using the inheritance tax regulation contained in the regional tax books published by the Spanish Ministry of Finance and in the regional fiscal reports produced by the General Council of Spanish Economists.

Figure OA.5: Regional Inheritance Tax Reforms by Type - Group (iii)

(a) Introduce tax discounts

(b) Repeal/decrease past tax discounts

This figure depicts the years for which each Spanish region introduced a different inheritance tax credit or/and tax deduction for heirs of group (iii) (i.e siblings, stepchildren, nephews/nieces, uncles/aunts). Panel OA.5a presents those tax changes that implied the introduction of an actual tax credit/deduction by region and year while Panel OA.5a shows those changes that involved a large reduction in past tax discounts or their repeal. These figures have been constructed using the inheritance tax regulation contained in the regional tax books published by the Spanish Ministry of Finance and in the regional fiscal reports produced by the General Council of Spanish Economists.

Figure OA.6: Regional Tax Reforms by Type - Group (iii)
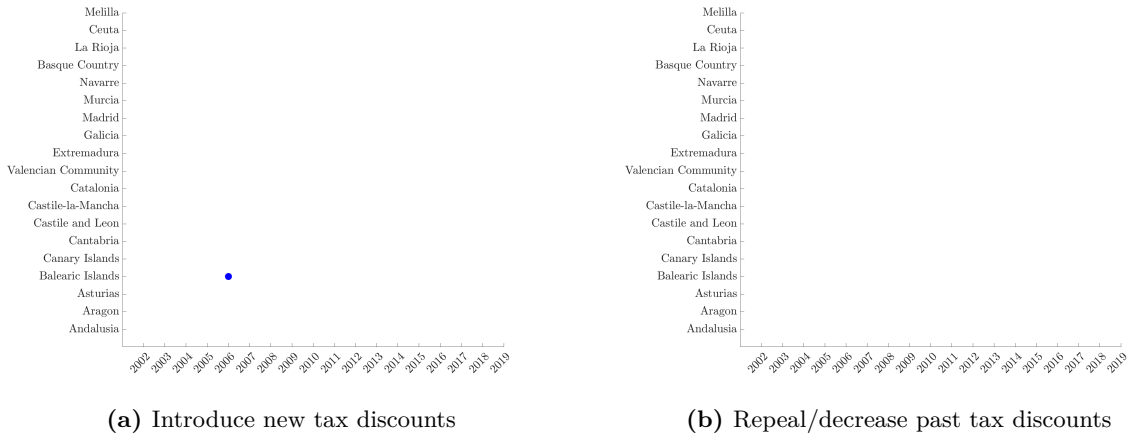
(a) Introduce new tax discounts

(b) Repeal/decrease past tax discounts

This figure depicts the years for which each Spanish region introduced a different inheritance tax credit or/and tax deduction for heirs of group (iv) (i.e cousins, grand nephews/nieces, more distant relatives and non-relatives). Panel OA.6a presents those tax changes that implied the introduction of an actual tax credit/deduction by region and year while Panel OA.6a shows those changes that involved a large reduction in past tax discounts or their repeal. These figures have been constructed using the inheritance tax regulation contained in the regional tax books published by the Spanish Ministry of Finance and in the regional fiscal reports produced by the General Council of Spanish Economists.

Figure OA.7: Number of Inheritance and Gift Tax Reforms by Year - Group (i)

(a) Inheritance Tax

(b) Gift Tax

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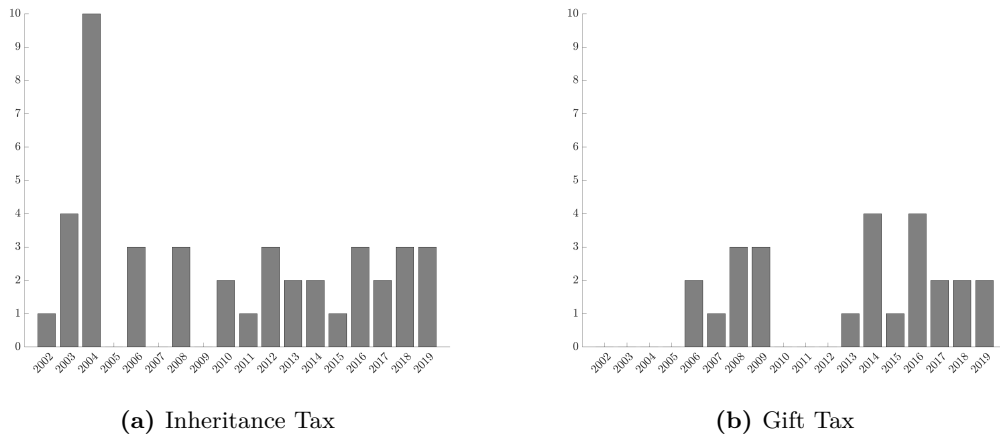
Figure OA.8: Number of Inheritance Tax Reforms by Year - Group (iii) and (iv)
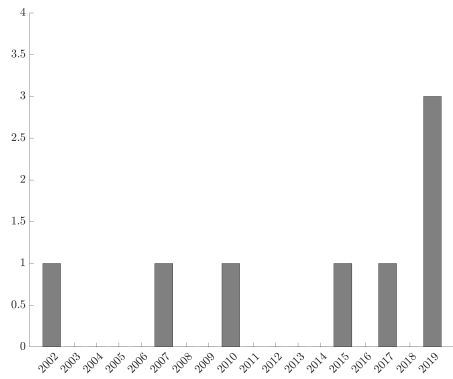
(a) Inheritance Tax, Group (iii)
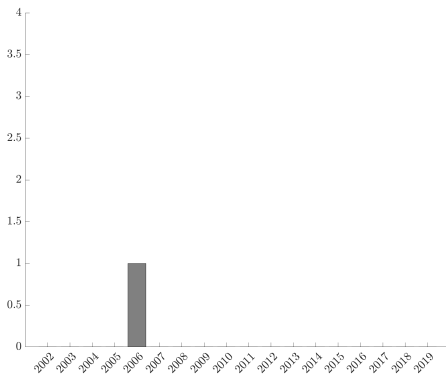
(b) Inheritance Tax, Group (iv)

Table OA.1: Tax Deductions and Credits for Heirs - Group (i)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Andalucia			td 100% if tb<125k				td 100% if tb<175k		
Aragon			td 100% max 3M						
Asturias			tc 97-99%*						
Balearic Islands		td 3k	tc 99%						
Canary Islands						td 100% max 1 M	tc 99.9%		
Cantabria		tc 97-99%*							tc 90-99%
Castile and Leon		td 6-120k age	tc 99%						
Castile la Mancha					tc 95%				
Catalonia	td 18-54k age	td 18-114k age							td 275-539k age tc 25%,50% + own τ
Valencian Community			tc 99%						
Extremadure					td 18-70k		tc 97-99%*/ tc 99% + own τ	tc 99% + own τ	
Galicia			tc 97-99%*						
Madrid			tc 99%						
Murcia			tc 99%						
Navarre									
Basque Country									
La Rioja			tc 99%						
Ceuta and Melilla									

td = tax deduction; tc = tax credit; tb = tax base; own τ = regional tax schedule; *Implicit tax credit. The information on tax reforms has been retrieved from the regional tax books from the Spanish Ministry of Finance and from the regional fiscal reports produced by the General Council of Spanish Economists

Table OA.2: Tax Deductions and Credits for Heirs - Group (i)

	2011	2012	2013	2014	2015	2016	2017	2018	2019
Andalucia							td 100% if tb<250k max 200K if 250k<tb<350k	td 100% max 1M	td 100% max 1M / tc 99%
Aragon									
Asturias						tc 99% + own τ	tc 97-99% + own τ		
Balearic Islands		tc 99.9% / td 100% max 40k-140k age							
Canary Islands		tc 99%				tc 99.9%			
Cantabria								td 50-150k age tc 100% if tb<100k tc 90% if tb>100k	tc 100%
Castile and Leon			td 175k			td 175k/ td 250k	td 250k/ td 300k	td 400k	
Castile la Mancha						tc 95% / tc 80-100%	tc 80-100%		
Catalonia	tc 99% + own τ			tc 99% / td 100-196k age + tc 20-99% 99% if spouse + own τ	td 100-196k age + tc 20-99% 99% if spouse + own τ				
Valencian Community			tc 99%/ td 100-156k + tc 75%	td 100-156k + tc 75%					
Extremadure	td 100% max 175k if inher<600k				tc 99%				
Galicia									
Madrid									
Murcia								td 250k spouse + own τ	
Navarre									
Basque Country		exempt/ td 400k, 220k + own τ	td 400k, 220k + own τ*		td 400k + own τ				
Ceuta and Melilla									

td = tax deduction; tc = tax credit; tb = tax base; own τ = regional tax schedule; *440k in Alava, Bizkaia, 220k in Gipuzkoa. he information on tax reforms has been retrieved from the regional tax books from the Spanish Ministry of Finance and from the regional fiscal reports produced by the General Council of Spanish Economists

Table OA.3: Tax Reforms for Heirs - Group (iii) and (iv)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Andalucia																		
Aragon																		
Asturias																		
Balearic Islands						td 1k group (iv)												
Canary Islands						td 9.3k			td 50k									tc 99%
Cantabria																		
Castile and Leon																		
Castile la Mancha																		
Catalonia	td 9k									td 50k						default		
Valencian Community																		
Extremadure																		
Galicia																		td 16k
Madrid																		tc 15%-10%
Murcia																		
Navarre																		
Basque Country														td 20,000-40,000 only Bizkaia				
La Rioja																		
Ceuta and Melilla																		

td = tax deduction; tc = tax credit; tb = tax base; own τ = regional tax schedule.

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Table OA.4: Effects of Inheritance Taxes on Population Aged Above 70 Years Old

	(1)	(2)	(3)
	Population > 70 age	Population > 70 age	Population > 70 age
ATR	-0.057	-0.061	0.041
	(0.236)	(0.244)	(0.174)
Time FE	No	No	Yes
Regional FE	No	Yes	Yes
Observations	342	342	342

Population over 70 years old is expressed in log terms.

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