Life Insurance and Death Benefits: What Shapes Participation, and Does It Matter for Inequality?

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Abstract

Welfare states across the OECD subsidize life insurance uptake. Upon death, these policies pay death benefits. We study how death benefits supplement bequests and why people take out insurance, including the role of tax incentives. In a novel administrative data set on wealth at death from Vienna, Austria, we link death benefits to terminal wealth and sociodemographics and study responses to an income tax reform that changed the tax treatment of insurance premia. We offer several novel facts. First, death benefits primarily supplement small- to mid-size estates and reduce inequality of bequests by up to 8%. Second, most payouts are final-expense policies that insure funerals; other benefits are tied to the presence of survivors, are hump-shaped over decedents' age, and contribute little to terminal wealth. Third, take-up of final-expense insurance responds to tax incentives, while other life insurance and net wealth at death do not. Our results shed new light on the motives to take out life insurance, the distributional importance of benefits and the tax treatment of insurance.

JEL Codes: D1, D3, G5, H24, H26, J14

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1 Introduction

Life insurance constitutes one of the largest insurance markets, especially in advanced economies (OECD 2024). As a source of income for dependents of the policy holder upon death, and as a long term savings vehicle that can accumulate a cash value, life insurance take-up is subsidized in welfare states across the OECD. The prominence of life insurance in household portfolios prompts three questions: who benefits, what drives take-up, and how large is the contribution of tax incentives?

The objectives of this paper are two-fold. First, we capitalize on a novel dataset of digitized probate court files from Vienna, Austria. The rich information documented in these administrative records allows us to characterize the (joint) distribution of insurance uptake, terminal wealth/bequests, and sociodemographic characteristics of those (decedents) who hold life insurance at death. Second, we study insurance take-up against the backdrop of a tax reform that made insurance participation relatively more attractive during a short time window. We use our descriptive evidence and the responses to this tax reform to inform our understanding of the motives behind different types of life insurance and the consequences of subsidizing insurance. A simple life-cycle model disentangles motives for insurance uptake.

We present several novel results. First, most death benefits supplement primarily small and medium size estates. When we compare the distribution of bequests with and without death benefits, we find that death benefits reduce inequality. For a bottom sensitive inequality measure, the reduction is sizable (up to 8%). Second, we show that the majority of death benefits insure funerals, rather than the consumption needs of survivors, as decedents in our data tie up death benefits in final expense insurance

policies.[1] We find that demand for final expense insurance is not driven by the absence of medical underwriting. Other types of death benefits are more closely linked to the presence of survivors and show a clear hump-shape in the decedent's age. However, this type of payout does not account for much terminal wealth neither among poor nor rich decedents. Third, our evaluation of the tax reform suggests that take-up of final expense insurance is sensitive to tax incentives, while other insurance and net wealth at death are not.

Our perspective on wealth at death is insightful for the study of portfolios and death benefits. First, our administrative data complements evidence from survey data, which has merits but also important drawbacks for the study of wealth, including issues related to coverage and frequency.[2] Second, the rich information in our data permits a distinction between death benefits from different types of life insurance. This granularity allows us to establish novel facts about insurance and take-up motives. Third, most evidence on life insurance comes from surveys of the living. But many policies only pay if the insured dies while coverage is in force. If insurance coverage among decedents differs systematically from coverage among the living (Cawley and Philipson 1999), the benefits actually paid at death can diverge from the coverage one would infer from a cross section of living individuals.[3] Studying realized death benefits reveals the true distributional impact of life insurance on decedents and those who receive bequests.

[1] Death benefits of final expense insurances can only be spent on funerals and related costs and policies are available already at low amounts of cover and without medical exams ("Medical underwriting").

[2] In contrast to household surveys that exclude institutional households (Poterba, Venti, and Wise 2018), struggle to cover the rich (Disslbacher et al. 2023) and often lack individual-level wealth data, our dataset includes individuals in institutions, over-samples the rich and refers to individuals. As opposed to most administrative data sources that cover specific segments of the distribution (Berman and Morelli 2021), the data generating process underlying our study applies to everybody who passes away.

[3] One explanation is asymmetric information between insurers and consumers. Cawley and Philipson (1999) find evidence that insurers may assess mortality risk more accurately than consumers. In the extreme, if insurers' information were perfect, minimal coverage among decedents could coexist with high coverage among the living.

Our paper contributes to the literature on household finance and insurance (Gomes, Haliassos, and Ramadorai 2021; Hong and Ríos-Rull 2012; Bernheim 1991) by examining life insurance, and providing a more granular distinction between final expense insurance (FI) and other types of life insurance (LI).[4] Our results are consistent with recent findings on insurance participation and reveal several important new facts about life insurance. First, we show a hump-shaped relationship between final expense insurance uptake and wealth rank. For other life insurance products, the decline in participation at higher wealth levels is much less pronounced, such that the relationship between wealth and uptake is positive (Gropper and Kuhnen 2025). Second, in terms of demographic characteristics, the results reveal that final expense insurance is popular among women. Marital status is much less predictive of final expense insurance than it is of other types of life insurance, which has previously been found to be more heavily used by married individuals (Inkmann and Michaelides 2012). The same holds for age.[5] Third, the patterns of insurance holdings suggest that the presence of medical underwriting might not be a key factor in shaping demand for certain insurance products.

Our study also adds to the literature on taxation. First, changes in the taxation of life insurance premia have been studied before in Germany and Italy. The two German studies suggest that tax incentives shift insurance uptake (Hecht and Hanewald 2012; Sauter and Winter 2010). Jappelli and Pistaferri (2003) do not find an effect of the Italian reform on household portfolios. We do not only complement these papers by using administrative rather than survey data on wealth, but also by showing that the responses

[4]While funeral insurance has been discussed in the context of developing countries (Banerjee et al. 2024), there is little comparable evidence for advanced economies. Moreover, the responses of funeral insurance to tax responses suggest that funeral insurance may play a more limited role as an intergenerational commitment device in our context, in contrast to previous findings (Berg 2018)

[5]Research on life insurance and age is more inconclusive. Some papers find a positive relationship between insurance usage and age, while others document a decline with age (Gomes, Haliassos, and Ramadorai 2021). Bulmahn (2003) finds that life insurance uptake follows an inverted U-shape in Germany.

to the reform differs across insurance products. Second, there is a literature on taxation and wealth at death. While prior work has focused on inheritance taxation and its effects on terminal wealth (Suari-Andreu et al. 2024; Escobar, Ohlsson, and Selin 2023; Glogowsky 2021; Erixson and Escobar 2020; Kopczuk 2007; Brunetti 2006; Poterba and Weisbenner 2003; Slemrod and Kopczuk 2000), we instead study how income tax policy shapes wealth at the end of life. The literature on income taxation and wealth at death is more limited, and evolves around specific elements of the interaction between income and estate taxation, such as the Basis Step-Up at Death (Gordon, Joulfaian, and Poterba 2016; Kopczuk 2016) or around means testing of income transfers and wealth (Johannesen, Sæverud, and Saez 2024; Wellschmied 2021; Neumark and Powers 1998). We document some degree of responsiveness to tax incentives especially among less affluent households. These individuals are often not covered in data from estate or inheritance tax returns, because taxation usually only affects more affluent decedents.

Beyond economics and finance, this paper also contributes to the literature on social insurance and the welfare state in two ways. First, private insurance as both a complement and substitute of social insurance against life cycle contingencies is increasingly studied by scholars of social policy. For example, many highlight the importance of life insurance for asset building as a long-term savings vehicle in many countries' retirement income and survivor's pension systems (OECD 2023; OECD 2005; Horn and Kohl 2024; Gerba and Schelkle 2013; Palier 2007).[6] Others consider private health insurance coverage (Thomson and Mossialos 2006). While several papers show how the public safety net helps people to cope with high out-of-pocket expenditure associated with

[6]Partly, this can be explained by the fact that life insurance is considered to offer commitment device services (Anagol, Cole, and Sarkar 2017; Webb and Beck 2002; Warshawsky 1982; Thaler and Shefrin 1981)

death (Valentine and Woodthorpe 2014; Woodthorpe, Rumble, and Valentine 2013),[7] this paper is the first to illustrate the role of private final expense insurance in achieving this goal. Second, life insurance plays an important role in the discussion around tax expenditures for social purposes. Through tax expenditures, the "Hidden Welfare State" (Howard 1999) often actively incentivizes life insurance uptake and hence death benefits (Howard 2021; Avram 2018). While some progress has been made to understand the incidence of tax expenditures for social purposes along the income distribution (Barrios et al. 2020; Collins 2020; Avram 2018), little is known about who benefits along the wealth distribution both among the living and at death. Our analysis of the incidence of death benefits along the distribution of wealth contributes to this literature.

In terms of policy-making, addressing low asset holdings and insurance might be advisable to improve financial resilience to sudden out-of-pocket expenditure needs or income losses in old age. This is even more pressing as a substantial share of the elderly do not have significant assets or low (expected) wealth levels when facing retirement across countries (Gornick and Sierminska 2021; Poterba, Venti, and Wise 2018). Encouraging life insurance holdings could be a remedy for these problems (Harris and Yelowitz 2018; Weir and Willis 2000; Hurd and Wise 1989). While our results show that death benefits matter indeed to supplement terminal wealth for individuals with low wealth, our conclusions suggest that not all types of life insurance (i.e. final expense insurance) are sensitive to tax incentives. Moreover, tax advantages do not translate into more wealth at the point where the insurance becomes operative. As a result, it may be preferable to consider alternative means to reduce financial vulnerability.

[7] Death-related out-of-pocket expenditures can be significant. Jones et al. (2020) show that in the US, out-of-pocket medical expenditure in the last two years before death amount to $18,600, of which $7,200 are funeral and other death expenses. We show that funeral expenses alone are equivalent to 83% (117%) of gross (net) wealth at death in the fifth decile of the gross (net) wealth distribution at death (see Table 8 in Appendix A.2).

The remainder of the paper is organized as follows. In Section 2, we set out in detail the characteristics of final expense insurance and how it contrasts with other types of insurance. Next, Section 3 develops a simple model to rationalize the demand for final expense cover. Subsequently, we introduce our data set (Section 4) before presenting the findings in Section 5. Section 6 concludes.

2 Insurance products and institutional environment

Life insurance pays a benefit upon the death of the insured individual. A broad range of products exists. Among insurance products, we distinguish term life insurance products and whole life insurance that accumulates a cash value (Hong and Ríos-Rull 2012). The first family of insurances provides a death benefit over the coverage period and no benefit if the insured individual survives the coverage period. Whole life insurance has a lifelong coverage period. As a result, individuals receive the face value with certainty at some point, and therefore they pay higher insurance premia.

There are several additional important characteristics that introduce variation between life insurance policies. First, some life insurance contracts are only available at a minimum/maximum level of cover (and hence premium). Second, life insurance products differ in terms of the fungibility of the benefit payment. Most importantly, a large share of insurance payouts at death are earmarked for final expenses. Finally, some insurance products have medical underwriting. Medical underwriting implies that insurance products might either not be available for individuals in poor medical condition, or that the insurance provides might charge higher costs.

Against this backdrop, we distinguish broadly between two types of life insurance: products marketed as final expense insurance (FI) and other types of life insurance (LI).

Typical final expense insurance policies in Austria are similar to a whole life insurance with a low face value. Historically, FI played an important role in popularizing life insurance in the broader population, facilitated by low premia and small face values (Hadziabdic and Kohl 2022). In most cases, the insurance is a limited pay life insurance. In this arrangement, the policy holder pays their premium only for a set time period rather than their whole life, while maintaining lifelong coverage. Table 9 in Appendix B provides an overview of several funeral insurance contracts available in Austria in 2017. In addition, FI are usually characterized by benefits that are at least to some extent earmarked for final expenses and feature minimal medical underwriting. Insurances that are not marketed as FI fall into the LI category. Table 1 summarizes the key differences between both types of life insurance.

Table 1: Funeral insurance vs. other life insurance

Variable	**Funeral insurance (FI)**	**Other life insurance (LI)**
Earmark	✗	✓
Medical underwriting	✗	✓
Minimum cover	↓	↑
Maximum cover	↓	↑

Notes: ↓ = low, ↑ = high; ✗ = no, ✓ = yes.

Until 2016, premium payments to funeral insurances benefit from tax deductibility. The tax deduction is capped at €2,920 for childless[8] individuals with a taxable income below 36.400, and gradually falls above that income. The maximum income to claim the tax deduction is €60,000.

Until 2016, premium payments to funeral insurances benefited from tax deductibility ("Topf-Sonderausgaben"). The tax deduction was capped at EUR 2,920 for childless

[8]Individuals with children benefit from more generous deductibility. Single parents had a maximum deduction of EUR 5,840, while for parents with three children or more, the deduction increased by an additional EUR 1,640.

individuals with a taxable income below EUR 36,400, and gradually falls above that income. The maximum income to claim the tax deduction was EUR 60,000. Final expense insurance premia were not the only expense that taxpayers could deduct from their tax liability. Premia for other personal insurances (voluntary health and accident insurances as well as certain term life insurances) as well as certain costs connected to the creation of residential homes were also deductible.

On March 13th 2015, the federal government of Austria announced a tax reform, scheduled to take effect on the first of January, 2016. The reform phased out the tax deductions for personal insurances. Specifically, insurance premia payments for contracts concluded before the reform became effective continue to be tax deductible until 2020. In contrast, individuals who have taken out insurance since the reform was operative are no longer able to reduce their tax liability by deducing insurance payments (even if they are made between during the transitional period between 2016 and 2020). We discuss other key features of the tax reform in the Appendix D.

Overall, the reform incentivizes taxpayers to take out an insurance contract before 2016, but after the reform was announced. The reform increased the price of taking out insurance only if insurance contracts were concluded after the transitional period already started. For existing contracts and those that were made before 2016, the transitional period gave people the chance to deduct a large share of their final expense insurance premia. This is because many insurance companies offer flexible payment schemes, and allow consumers to pay all premia in several large payments or even a single one-off payment.

3 Theory

3.1 Setup

We start from a simple setting where agents can either choose to buy funeral insurance or to self-insure. In this world, funeral insurance serves two purposes. In both cases, the final expense insurance serves as a commitment device. On the one hand, survivors rather than decedents choose the level of funeral expenditure. As the payout of final expense insurance is earmarked, decedents can set their preferred level of funeral expenditure by choosing the level of funeral insurance accordingly. This is particularly attractive if survivors would choose a different level of funeral spending than the decedent (in order to increase their inheritance, for example). On the other hand, we allow for individuals with time inconsistent preferences. Decedents may use funeral insurance as a tool to ensure that they do not run down their wealth to quickly without covering their funeral. If the younger self knows that in the future, they will prefer to consume rather than set money aside for a funeral, they can choose insurance to commit themselves to saving.

In the latter case, a simple whole life insurance with low face value might perform a similar role to the funeral insurance. Therefore, the paper discusses two extensions in the Appendix where individuals can also choose from other life insurance products and show under what conditions funeral insurance are still preferable to life insurance.

Consider a simple model with three periods $t \in \{0, 1, 2\}$. In period 0, the agent simply chooses the optimal level of funeral insurance A. For simplicity, we assume that the agent pays the entire premium as a single premium in this period - an option that most insurers offer.

As a result, at the beginning of period 1, the agent has a level of liquid wealth S_1

given by $W - pA$, where W is initial wealth, and p is the price of the insurance product.[9] At $t = 1$, the agent either dies with probability $1 - s$ or survives with probability s and dies in $t = 2$ with certainty. Survivors spend $A + T_t$ on the funeral, where T_t is a top-up they choose. $W - A - F_t$ is left as a bequest B_t to the survivor.

Next, assume that the agent maximizes a utility function. The agent has CRRA utility from consumption, the funeral expenditure and a bequest, which is a luxury good.[10] Then, the agent's utility is given by:

$$\begin{aligned} U(W) =& (1-s)\left[\frac{\mu(F_1+A)^{1-\gamma}}{1-\gamma} + \frac{\phi_1}{1-\gamma}\left(\frac{B_1}{\phi_1}+\phi_2\right)^{1-\gamma}\right] + \\ & s\left(\frac{C^{1-\gamma}}{1-\gamma} + \frac{\beta_t}{1+\rho}\left[\frac{\mu(F_2+A)^{1-\gamma}}{1-\gamma} + \frac{\phi_1}{1-\gamma}\left(\frac{B_2}{\phi_1}+\phi_2\right)^{1-\gamma}\right]\right) \end{aligned} \tag{1}$$

In contrast, the survivor (d) can allocate the liquid wealth they receive between funeral expenditure and their inheritance. Their preferences are given by:

$$U_d(W, A) = \left[\frac{\mu(F_t+A)^{1-\gamma}}{1-\gamma} + \frac{\phi_1}{1-\gamma}\left(\frac{B_t}{\phi_1}+\phi_2\right)^{1-\gamma}\right] \tag{2}$$

μ is a parameter that determines how much utility weight the funeral has. It is unity for the decedent. However, we use the parameter to open the possibility that the

[9] This can be thought of as the profit of the insurance company, or an administrative charge or tax.

[10] The functional form of the bequest motive is taken from Kvaerner (2023), Lockwood (2018) and Ameriks et al. (2011). Each parameter of the bequest motive has an interpretation. ϕ_2 is a minimum floor. Individuals with wealth below the floor do not leave a bequest. ϕ_1 is the strength of the bequest motive. The "warm-glow" specification (Andreoni 1989) in this paper is a reduced form for the altruistic bequest motive, where ϕ_2 is a function of the present discounted value of the combined labor income across all future generations (Ameriks et al. 2011; Abel and Warshawsky 1988). For simplicity, we assume that the risk aversion parameter γ for bequests coincides with the risk aversion parameter for consumption (Kvaerner 2023; De Nardi and Yang 2014; De Nardi 2004; Ameriks et al. 2011).

weight placed on funeral versus bequests differs between the agent and the survivor with otherwise similar preferences ($\mu \neq \mu_d$), giving rise to an interpersonal conflict of interest. γ, μ, ϕ_1 and ϕ_2 are utility function parameters. To ensure that the agent treats B as luxury goods, $\phi_2 > 0$. ρ is a standard time discount factor. We use β_t to implement time-inconsistency that gives rise to demand for interpersonal commitment tools. In $t = 0$, $\beta = 1$, while in $t = 1$, $0 < \beta \leq 1$.

Solution Given A, if death occurs at $t = 1$, the survivor chooses (T_1, B_1) to allocate S_1. Otherwise, the decedent chooses $S_2 = S_1 - C$, before the survivor decides on allocating S_2 between T_2 and B_2.

Let $V(S, A; \mu_c)$ be the value of the (T, B) problem at liquid wealth S and coverage A with survivor weight μ_c. The $t = 1$ consumption choice satisfies the Euler equation

$$C^{-\gamma} = \frac{\beta}{1+\rho} M_S(S_2, A; \mu_c), \qquad M_S(S, A; \mu_c) \equiv \frac{\partial V}{\partial S}(S, A; \mu_c) > 0. \tag{3}$$

Insurance choice The decedent chooses to maximize (1), anticipating (3) and the (T, B) rules in each branch. Earmarking (interpersonal commitment) operates through μ vs. μ_c; intrapersonal commitment operates through $\beta < 1$, which reduces S_1 available for $t = 1$ consumption and raises the shadow value of S_2.

3.2 Statics

Wealth gradients and participation Several commitment channels can generate an inverted u-shape for the relationship between funeral insurance participation and wealth. For low W coverage is unaffordable; at high W the marginal value of earmarking/-

commitment declines (bequests less luxury-constrained, self-control less binding). A minimum policy reinforces this pattern.

Price cuts Regardless of the insurance motive, price cuts (or tax changes) do not change participation for some individuals, but raises it for others. Other implications depend on the insurance motive. If $\beta = 1$ and $\mu_c < \mu$, then a decrease in p weakly increases coverage (A^*). On any wealth range where (T_t, B_t) are interior, expected funeral spending increases. If $\beta < 1$ and $\mu_c = \mu$, then a decrease in p can raise participation and A^* but does not raise funeral spending upon death at $t = 1$. In contrast, with $p > 1$ it weakly reduces T_1^* because total resources $S_1 + A = W - (p-1)A$ fall with A. The survival branch reallocates toward $t = 2$ (lower C, higher S_2), so T_2^* may increase, but the expected change in the funeral spending by survivors is small and can be non-positive for moderate s.

4 Data

We compile a dataset that allows a joint analysis of wealth at death, the portfolios of decedents, their choices regarding wealth transfers to survivors as well as a broad range of socio-demographic characteristics. The data is based on a sample of digitized probate records.[11] Probate records are court files that document each step in every probate court case in Austria. The purpose of this procedure is to document all assets and liabilities of each decedent exhaustively in order to enforce the inheritance law and transfer ownership titles to heirs. In addition, the probate process ensures that all entries in official registers are made ascertain that other final arrangements are made. Probate data has an

[11] We compare our data to other data sources on wealth in Vienna using a matching approach in a companion paper.

important role in research on wealth at death (Tomes 1981; Menchik and David 1983; Brunetti 2006). In contrast to other countries such as the UK, by Austrian law a probate proceeding is initiated for every death, irrespective of the level or composition of assets held by the deceased. This results in a wide population coverage.

Our sample of probate records is drawn from probate courts in 10 districts of Vienna, the capital, covering the years from 2014 to 2019. In each district, we sample approximately 11% of probate cases each year. After dropping probate cases that were processed by foreign jurisdictions yields a total number of 4712 observations.[12] We predominantly use a stratified approach to draw the sample, to ensure that the data covers extreme values. To achieve an oversampling of high-wealth probate cases, the stratification of the selection within the court districts aims to draw particularly complex proceedings with a higher probability. In nine out of the ten districts in our sample, we replace 5% of the randomly drawn sample within each district-year with the probate cases that have the most procedural steps in that district-year. This approach is based on the assumption that complex proceedings with more procedural steps are also associated with higher estate values.[13]

The probate data contain information on all assets and liabilities valued at the point of death of the decedent. The individual balance sheets cover real estate, vehicles, business wealth, valuables, financial wealth, cash, and claims against other individuals or organizations. In contrast to the HFCS data, wealth is at the individual level, and jointly held assets are allocated to the decedent by the probate court based on their share

[12] We also drop homeless individuals. All probate cases of individuals who pass away without an address of permanent residence are processed in the the district court "Innere Stadt". Including them in the sample would lead to a strong overrepresentation of the homeless.

[13] In the Appendix, we show that the number of procedural steps is a correlate of the duration of a probate case. It is noteworthy that our over-sampling approach is an improvement over the Austrian Household Finance and Consumption Survey, which does not engage in oversampling.

or on an equal split basis if no individual share is available. The broad coverage of different assets is an important characteristic that distinguishes our dataset from other probate records. For example, as opposed to the English probate data, jointly held property is included in this paper's wealth measure. Moreover, in contrast to the English data, it is possible to extract information on portfolios and specific wealth components from our dataset, such as housing wealth.

Liabilities include bank loans, credit overdraft, unpaid bills, and obligations towards other individuals. We do not add liabilities that only materialize at death to the measure of debt. This includes funeral costs, probate court and notary fees, but also the asset recovery claims from public minimum income support transfers, for example.

Survivors have strong incentives to report assets truthfully as misreporting is under threat of punishment. For most financial assets, a proof of the value, such as a bank statement is required. In many cases, professional valuators are involved, not least for real estate. While under certain circumstances, gifts made in the years prior to death are included in the probate process, this is by far not the case for all inter-vivos transfers. Therefore, we exclude them from the analysis.

The dataset allows a unique insight into final expense insurances compared to other sources. Other data sources such as the Austrian Household Finance and Consumption Survey (HFCS) or the Survey on Health and Retirement (SHARE) do not contain this information. Other data sources do not exist: the abolishment of wealth and inheritance taxation and the specific rules for capital income taxation make it impossible to use tax data for studying individual financial behavior in Austria. Figure 5 in the Appendix A.2 tracks the aggregate evolution of different types of life insurance implied by our data for Austria. Figure 6 compares the aggregate value of life insurance in our data to the aggregates from other sources such as the financial accounts.

Figure 1 summarizes the portfolio composition across deciles of gross and net wealth at death. Death-benefit products (LI and especially FI) are prominent in the lower half and the middle of both distributions. In the fifth gross-wealth decile (upper panel), death benefits account for roughly one quarter of assets, about two thirds of which is FI. Their importance peaks in the fifth decile, remains sizable in the sixth, and then declines sharply toward the top. The net wealth distribution (lower panel) shows a similar pattern. Unlike the gross-wealth case, however, individuals in the second and third net-wealth deciles also hold substantial insurance. This implies that decedents who have low net wealth due to debt hold insurance.

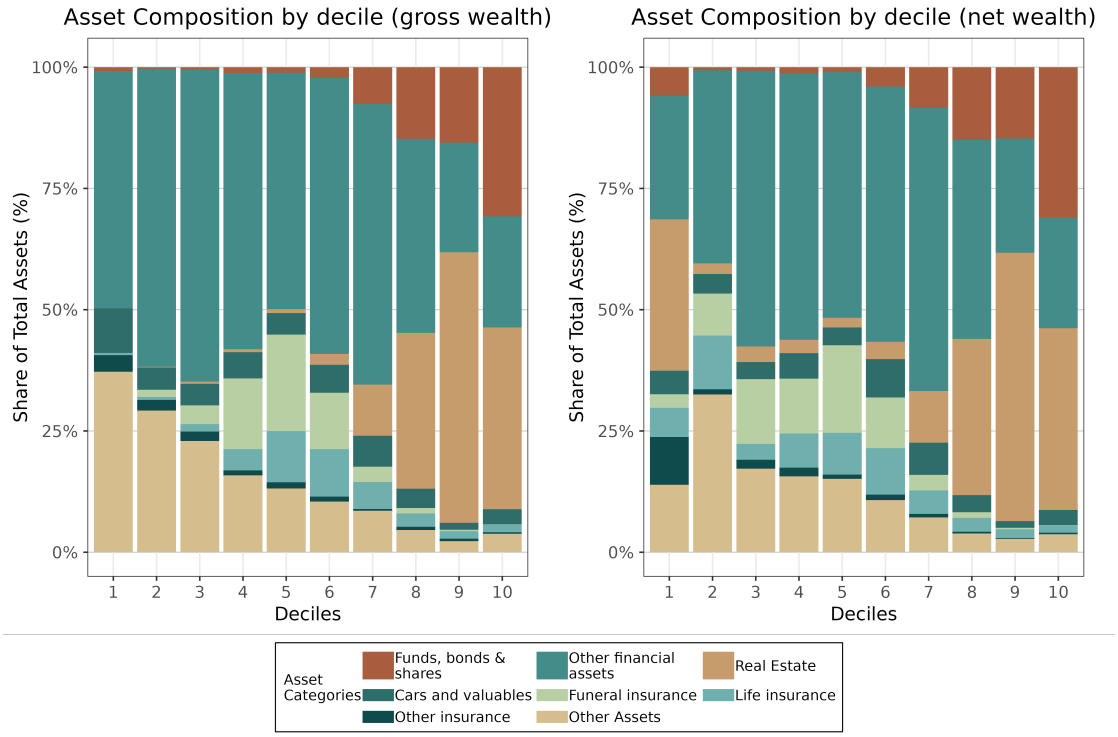
5 Results

This section begins by studying the importance of death benefits along the distribution of wealth at death and bequests. Next, Subsection 5.2 examines the correlates of death benefits descriptively, focusing on socio-demographic characteristics of decedents. We compare FI and LI death benefits. Subsection 5.3 estimates the responses of decedents to the 2016 income tax reform in terms of their final expense planning behavior.

5.1 Distributional incidence

Figure 2 shows participation in different types of life insurance along the distribution of wealth at death. It plots a smoothed estimate (locally estimated scatterplot smoothing) of the mean participation in each percentile on the y-axis, and the range of percentiles on the x-axis. The upper panel refers to the data (residualized for age), and the lower panel to the model. Both the data and the model point towards a hump-shape of insurance participation in wealth. The inverted u-shape is much more pronounced for FI.

Figure 1: Portfolios along the distribution of terminal wealth.

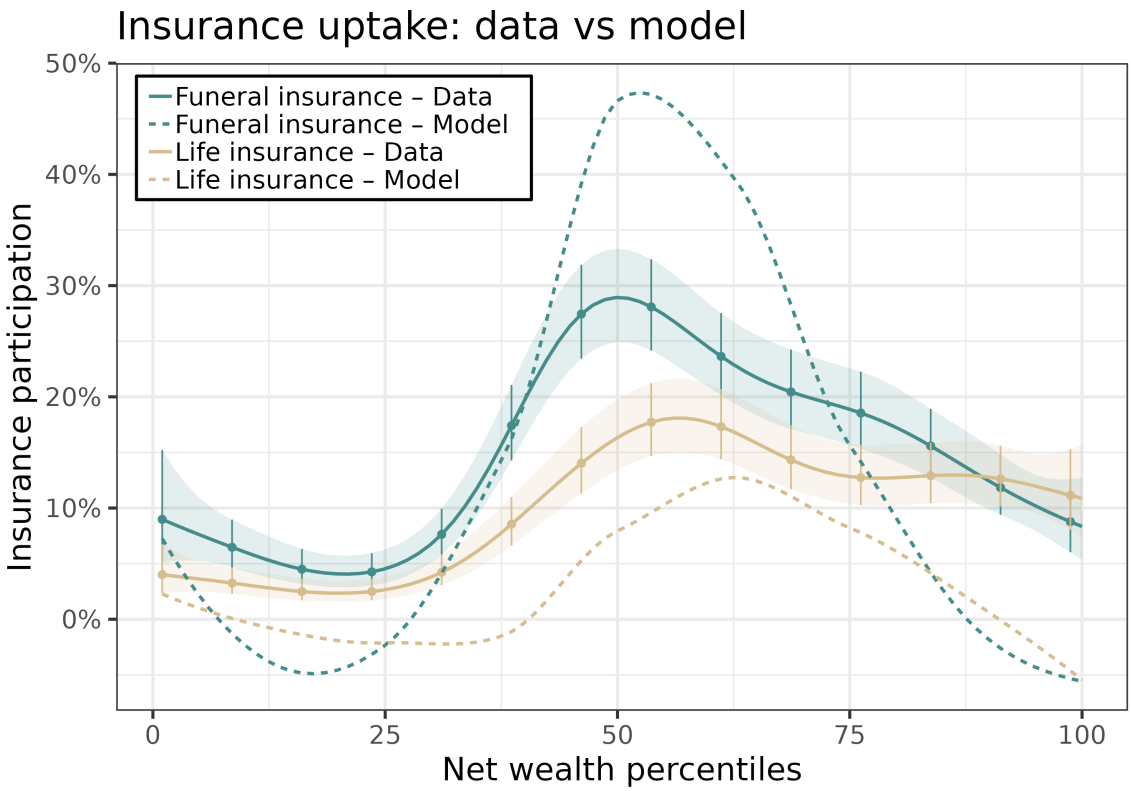


Note: The left panel refers to the share of different types of assets in total gross wealth for the deciles of the gross wealth distribution of decedents. The right panel refers to the share of different asset types in total assets for the deciles of the net wealth distribution of decedents. "Other financial assets" refer to cash, checking and savings bank accounts and building society savings contracts. "Other assets" includes claims towards other individuals, companies or the government. Weights are used to take into account stratified sampling. Results are pooled over years.

Given the distributional incidence of death benefits established in Figure 1, what is their impact on the distribution of bequests? To explore this question, we simulate the distribution of bequests, and appraise the change in inequality induced by death benefits. Inequality is measured with a General Entropy index, at varying α-parameter values.[14] Figure 2 illustrates by how much our inequality measure increases if death benefits are subtracted from the estate. Since bequests can only be positive, all negative

[14] A high value of α implies that the index emphasizes bequests at the top, while a low value makes the index more sensitive at the bottom.

Figure 2: Insurance take-up in the data and the model

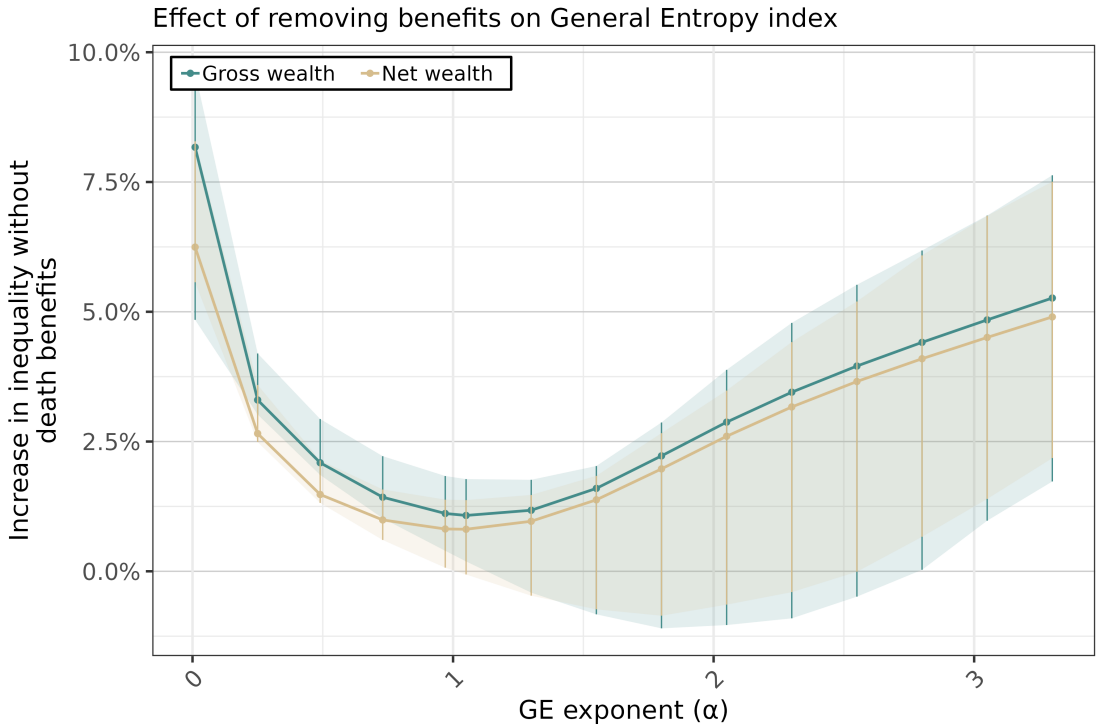


Note: The x-axis in each panel refers to the percentiles of the distribution of wealth at death, and the y-axis to participation in insurance. In the left panel, we report participation as measured in our data (across years). The estimates are residualized for age. The standard errors are based on the sampling probability. Weights are used to take into account stratified sampling. In the right panel, we plot the participation rates from our model. In the model wealth values are sampled on a logarithmic grid from 1 to 10,000,000 (100 points), so spacing is even in log space. $\mu = 1$, $\beta = 0.75$,$\rho = 0.05$, $p = 1.005$, $s = 0.99$, and the rest of the parameters is taken from Ameriks et al. (2011) $\gamma = 3$ $\phi_1 = 47.6$ and $\phi_2 = 7,280$. The mean participation in each percentile is estimated with a loess smooth.

bequests that would be below zero are set to zero. Figure 2 reveals that death benefits tend to make the distribution of bequests slightly more equal across different values of the α parameter. If the parameter is chosen such that the index is very bottom-sensitive, inequality in net bequests increases by up to six percent. For example, at $\alpha = 0.01$, the index is 44.0 (7.95) for net wealth (gross wealth) including death benefits, and 44.67 (8.60) for net wealth (gross wealth) including death benefits. Therefore, death benefits

reduce inequality in net (gross) bequests by up to six (eight) percent.

Figure 3: Difference in bequest distribution before and after death benefits



Note: This figure plots the difference between two General Entropy inequality indices with a given α parameter computed over the distribution of bequests with and without death benefits. The distribution including death benefits is the reference value, and changes from omitting death benefits are reported relative to the reference value. We do not report negative values for α, as well as zero and unity, to be able to handle all non-negative bequests. Indices are computed for net and gross wealth separately. Higher values of the index imply higher levels of inequality. Weights are used to take into account stratified sampling. Standard errors obtained from bootstrapping.

In contrast, for α values around unity, the index suggests that there is not much change in distributional outcomes that is due to death benefits. As the index becomes more top-sensitive for $\alpha > 1$, the increase in inequality induced by death benefits increases again.

5.2 Determinants of death benefit payments

Table 2 examines the correlates of funeral insurance and other life insurance, both in the extensive margin in columns (1) and (3), as well as in the intensive margin in column (2) and (4). The first and third column refer to the marginal effects estimated with a probit model. Insurance uptake as the dependent variable. The results on the intensive margin in the second and fourth column are based on a model that corrects for selection into the sample of insured individuals (Heckman 1979). All specifications feature court district and year-of-death fixed effects.

The comparison of life and funeral insurance policy holdings at the end of life shows several interesting facts about the relationship between demographics and insurance participation. First, the age-dependence of funeral insurance is not as clear as the age-dependence of other life insurance products. while older individuals tend to have significantly higher levels of payouts at death in column (2), they are not more likely to take out an insurance policy. In contrast, life insurance participation is related to age in an inverted u-shape, both in terms of the intensive and the extensive margin. Second, Table 2 reveals parallels between different insurance products. Both funeral insurance but also life insurance more generally are in higher demand among widowed individuals, and women. Women also participate more actively in funeral insurance on the intensive margin, compared to men. While single decedents are neither more nor less likely to participate in funeral insurance, singles are significantly more likely to have some other sort of life insurance. Using an indicator for long-term care allowance recipients as a proxy for individuals in poor health, we do not find systematic variation across health states in view of insurance demand.

Table 2 also reflects how other financial choices that individuals make towards the

end of their live relate to funeral insurance cover. Neither residential choice nor inter-vivos gifting is associated with higher insurance participation. However, there is robust evidence showing that decedents with (higher levels of) funeral insurance are less likely to die intestate. This finding does not hold for other types of life insurance. Finally, in terms of net wealth at death, there is a pronounced hump-shaped relationship to funeral insurance participation. The hump-shape is particularly significant for the extensive margin, with weakly statistically significant coefficients for the intensive margin. A similar relationship governs the uptake of other life insurance products, although the inverted u-shape is much more pronounced for funeral insurance. Participation for life insurance also peaks at a lower wealth rank (see also Figure 2).

5.3 Life insurance and tax policy

Are life insurance holdings sensitive to tax incentives? To investigate this question based on the 2016 tax reform in Austria, we examine participation among decedents in granular time intervals around the reform announcement. Figure 4 plots the share of insured decedents in month-of-death bins from 2014 through the end of 2019. The red vertical line indicates the announcement of the tax reform in 2015. The shading and size of the points indicates the number of decedents within each bin. For ease of comparison, we overlay separate linear fits before and after the announcement to highlight levels and trends.

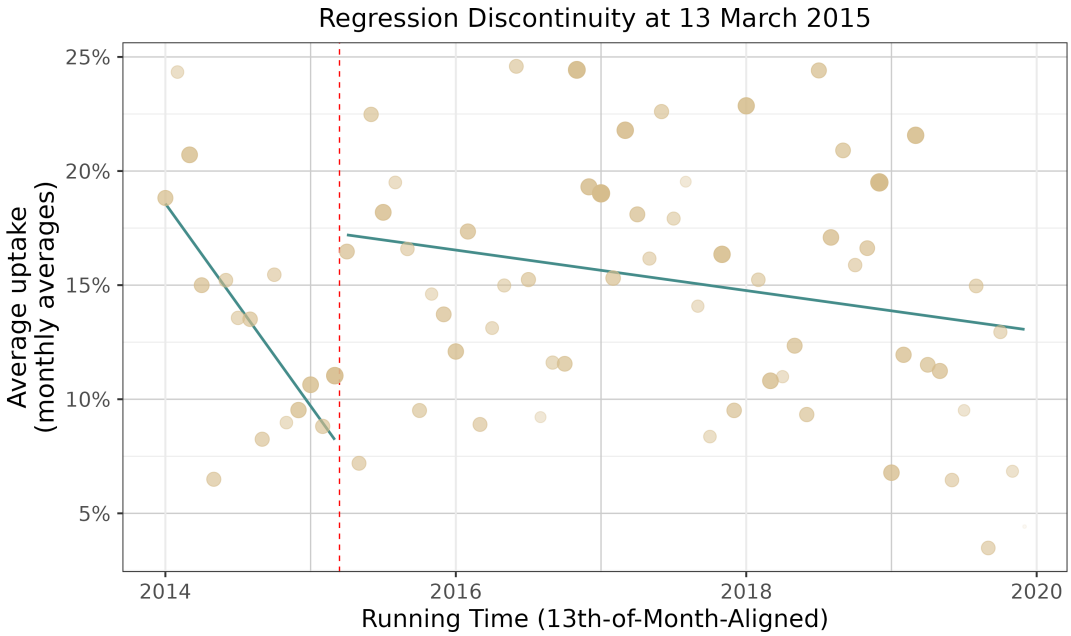
Figure 4 clearly indicates a break in levels and trends before and after the reform announcement. While before March 2015, the share of covered decedents was declining, reaching a minimum of around 10% of decedents with cover. After the reform, the level was significantly higher, between 15% and 20%. After the announcement until the end

Table 2: Correlates of final expense and life insurance uptake

	Dependent variable: uptake / amount			
	probit FI (extensive)	*OLS* FI (intensive)	*probit* LI (extensive)	*OLS* LI (intensive)
	(1)	(2)	(3)	(4)
Age (linear)	0.002	0.011	0.004***	0.133**
	(0.003)	(0.008)	(0.001)	(0.052)
Age (quadratic)	0.00001	−0.00004	−0.0001***	−0.002**
	(0.00002)	(0.00003)	(0.00001)	(0.001)
Marital status: Married	−0.017	−0.050	−0.006	0.419*
	(0.019)	(0.107)	(0.017)	(0.254)
Marital status: Widowed	0.026	−0.010	0.021	1.086***
	(0.021)	(0.104)	(0.019)	(0.365)
Marital status: Divorced	0.016	0.029	0.011	0.721***
	(0.023)	(0.087)	(0.019)	(0.266)
Female	0.024**	0.171*	0.017	0.405
	(0.012)	(0.099)	(0.011)	(0.260)
With care allowance	0.018	−0.024	0.001	−0.210
	(0.016)	(0.079)	(0.014)	(0.199)
Has a testament	0.028**	0.189	−0.009	−0.210
	(0.013)	(0.120)	(0.012)	(0.202)
Made a gift	−0.027	−0.160	0.009	0.334
	(0.022)	(0.186)	(0.023)	(0.211)
Net Wealth (perc.) (linear)	0.009***	0.046	0.006***	0.186**
	(0.001)	(0.032)	(0.001)	(0.081)
Net Wealth (perc.) (quadratic)	−0.0001***	−0.0004	−0.00004***	−0.001**
	(0.00001)	(0.0003)	(0.00001)	(0.001)
Has LI	0.146***	0.619		
	(0.015)	(0.516)		
Has FI			0.124***	2.294
			(0.012)	(1.716)
Observations	4,172	618	4,172	501

Note:: Dependent variable is an indicator for insurance uptake (extensive) and the log payout sum at death for decedents with positive payouts (intensive). FI (LI) is final expense (other life) insurance. Results from probit regressions are reported as marginal effects. Robust (HC0) standard errors in parentheses; regressions weighted to take into account stratified sampling. All models feature year-of-death fixed effects and court district fixed effects. Fixed effects and coefficients on residual categories for categorical variables dropped.
*p<0.1; **p<0.05; ***p<0.01

Figure 4: Discontinuity in insurance coverage at death before and after reform



Note: Insurance participation in one-month time intervals before and after the announcement of the 2016 tax reform. Each point represents the share of insured decedents in the total number of individuals who passed away in that month. Size and transparency of each point reflects the number of decedents in each bin. The red dashed line is the cutoff (reform announcement on March 13th, 2015). The regression lines are based on a linear fit before and after the reform announcement.

of 2019, the share of covered decedents declines again, though at a much slower rate than before the reform announcement.

Next, Table 3 examines the change in insurance participation and net wealth before and after the announcement of the 2016 tax reform. The table reports average marginal effects from two different probit models of insurance uptake and the treatment effect from a linear model with net wealth as the outcome variable, measured in thousands of Euros. We recover the estimates from our regression discontinuity design (RDD), with automatic bandwidth selection and a triangular Kernel.

The results suggest that FI take-up increased significantly around the reform announcement. The average marginal effect is 0.32. This suggests that among individuals

Table 3: ATE Baseline Estimates (RDD)

	Outcome		
	FI (participation)	LI (participation)	Net Wealth
Treatment at cutoff	0.319**	−0.144	−196.288*
	(0.131)	(0.175)	(115.124)
N	2962	2962	2962
Effective N	297	262	251
Kernel	Triangular	Triangular	Triangular

Note: Column entries are average marginal effects from probit models in columns (1) and (2) and a linear effect in column (3) measured in thousands of Euros. FI (LI) is final expense (other life) insurance. Robust (HC0) standard errors in parentheses; regressions weighted for stratified sampling. Linear smooth on both sides of the cutoff. All models feature year-of-death fixed effects and court district fixed effects. Individuals aged 80 and older at the time of the reform announcement are excluded from the sample.
*p<0.1; **p<0.05; ***p<0.01

who pass away shortly after the reform announcement, the probability of participation in funeral insurance is by 30 percentage points higher compared to individuals who pass away before the cutoff. The estimate is statistically significant at the five percent level. For other types of life insurance, we do not find an effect of comparable magnitude. The estimate for participation in life insurance other than FI is negative. Moreover, coefficient is estimated imprecisely, and the standard error is larger than the estimate. Finally, column (3) in Table 3 studies net wealth at death before and after the reform. The estimate suggests that net wealth was lower on the treated side of the cutoff, than among untreated individuals. The estimate is statistically significant at the 10%-level, suggesting that it is less precise, compared to the estimate in column (1). Overall, the non-positive estimate of net wealth implies that even though participation in funeral insurance may have increased, this did come at the expense of other types of savings, at best.

In Section E, we report additional robustness checks for the main specification in

Table 3. We re-estimate the all models without weights, and replicate the analysis while including an extensive set of control variables. The results remain qualitatively unchanged: the treatment effect is positive and statistically significant for FI, but not the other outcome variables.

The reform should affect primarily individuals who live on lower incomes due to the diminishing deductibility of insurance contributions above an annual income threshold of €36,000. Therefore, the estimates in Table 3 are likely to mask substantial heterogeneity along the distribution of income. To capture this heterogeneity, Table 4 regresses participation in different insurance types, as well as net wealth on an indicator that distinguishes individuals who pass away before and after the reform announcement, interacted with our measure of income at death.[15] Essentially, the estimation corresponds to an RDD with maximum bandwidth and a uniform kernel. Each model features control variables and fixed effects. We focus on the coefficient estimates identifying the difference in average participation before and after the reform announcement, and the interactions of this coefficient with income.

In column (1) of Table 4, we report the estimate of the difference in mean FI participation before and after the reform announcement, controlling for a wide range of covariates. At zero income, the average participation after the announcement was more than twice the participation before the announcement. The estimate is highly significant in statistical terms. In the second row of column (1), we report the estimate of the interaction effect between the post-reform indicator variable and the income coefficient. The estimate suggests that those passing away with higher incomes respond significantly less to the tax reform.

[15]This is only available for a subset of the sample, such that the number of observations drops significantly upon introducing retirement income into the analysis.

Table 4: Income Heterogeneitsy Estimates

	Dependent variable:		
	probit FI (participation)	*probit* LI (participation)	*OLS* Net wealth
	(1)	(2)	(3)
Post-reform	1.136***	0.482	−617.959
	(0.388)	(0.304)	(440.335)
Post-reform × Income (log)	−0.162***	−0.078*	98.848
	(0.052)	(0.041)	(61.421)
Observations	1,055	1,055	1,055

Note: Column entries are average marginal effects from probit models in columns (1) and (2) and a linear effect in column (3) measured in thousands of Euros. FI (LI) is final expense (other life) insurance. Robust (HC0) standard errors in parentheses; regressions weighted to take into account stratified sampling. Each specification features control variables: age, age (squared), marital status, gender, receipt of long term care cash transfer, intestacy, inter-vivos gifting, and proceeding duration. All models feature year-of-death fixed effects and court district fixed effects. Fixed effects and coefficients on control variables dropped. Individuals aged 80 and older at the time of the reform announcement are excluded from the sample.
*p<0.1; **p<0.05; ***p<0.01

The second column reports the results for the same specification as in column (1) of Table 4, with the exception that the dependent variable is participation in other types of life insurance. Paralleling the estimates in the first column, the coefficient on the effect of LI at zero income is positive, while the coefficient on the interaction effect is negative. However, both effects are imprecisely estimated. The interaction effect is statistically significant at the 10% level.

Finally, column (3) in Table 4 refers to a specification with net wealth at death as the dependent variable. Individuals with low income at death have on average lower wealth when they pass away after the reform announcement, while the opposite effect prevails among those who have higher incomes. However, for neither group, the difference between net wealth before and after the reform announcement is statistically significant.

5.4 Survivor responses to planning strategies

In our final set of results, we examine whether policy-induced variation in final expense planning is related to survivors' allocation of resources between funeral spending and bequests. The upper panel of Table 5 presents the first-stage estimates, where the dependent variable is FI take-up.[16] The lower panel reports the second-stage results, linking insurance take-up to funeral spending. Column (1) estimates a linear specification without covariates beyond fixed effects, while Column (2) adds further covariates. Column (3) drops weights.

Table 5: Tax reform and Funeral Spending (Fuzzy RDD)

	(A) First stage: Take-up		
	(1)	(2)	(3)
Local Wald first stage	0.169*	0.281**	0.165*
	(0.089)	(0.112)	(0.090)
	(B) Second stage: Spending		
	(1)	(2)	(3)
Local Wald second stage	3,193.465	620.161	−781.655
	(6,272.860)	(3,944.028)	(4,987.809)
Estimation bandwidth (h)	180.4	150.2	192
Eff. Number of Obs.	464	331	494

Note: First and second stage treatment estimates of fuzzy RDD. The dependent variable in the first stage is funeral insurance uptake. The second stage dependent variable is funeral spending in EUR. Robust standard errors in parentheses. Linear smooth on both sides of the cutoff. All models feature year-of-death fixed effects and court district fixed effects. Column (2) has age, age (squared), marital status, gender, receipt of long term care cash transfer, intestacy and inter-vivos gifting as additional control variables. Column (3) drops weights. The first stage is a linear probability model and the second stage an OLS regression, both implemented with the rdrobust R package (Calonico, Cattaneo, and Titiunik 2015). Individuals aged 80 and older at the time of the reform announcement are excluded from the sample.
*p<0.1; **p<0.05; ***p<0.01

[16] In contrast to Table 3, in Table 5 the MSE-optimal bandwidth selector takes into account the second stage (Calonico, Cattaneo, and Titiunik 2015). Moreover, the first stage of the fuzzy RD is a linear probability model. As a result, the coefficient interpretation is different between the the results in Tables 5 and the first column in Table 3.

Across specifications, the first stage reaffirms the relationship between the reform and the funeral insurance take-up. Across all specifications, the effect of the reform on participation is statistically significant at least at the 5% level. However, the treatment effect in the first stage is largest in magnitude when we introduce additional control variables.

The estimates of the second stage suggest that the reform-induced changes in funeral insurance uptake did not affect funeral spending. Across specifications, the coefficient estimate ranges between approximately a negative € -780.00 and positive € 3,190.00. However, regardless of the choice of the specification, the estimate of the effect of funeral insurance take-up on spending remains statistically insignificant in all three columns.

6 Conclusion

This paper examines wealth at death and life-insurance payouts. Using newly digitized probate records from Vienna, we document who holds which policies at the end of life and how these holdings vary with terminal wealth and demographics. We then study a tax reform that temporarily increased the relative attractiveness of life insurance.

Three findings emerge. First, death benefits mostly supplement smaller estates. Therefore, they tend to even out the distribution of bequests. Second, at low levels of terminal wealth, death benefits primarily insure funeral expenses rather than support survivors' consumption. Other life-insurance products are more closely associated with the presence of survivors but contribute little to terminal wealth across the distribution. Third, take-up of final-expense insurance is responsive to tax incentives, whereas other life insurance and net wealth at death are much less so.

Our results show that especially at the bottom and the middle of the distribution of wealth at death, saving to cover final expenses is an important motive. However, the tax sensitivity of final expense insurance products suggests that multiple savings instruments might help to satisfy this aim, and final expense insurance might not be the most attractive one absent tax incentives. In contrast, the weaker response of other life insurance suggests that its valued features (such as contingent transfers to survivors or long-horizon saving under commitment) are not primarily driven by tax advantages.

There are some important qualifications to our findings. First, while our data captures final expense insurance well, the data on life insurances may not have the same quality. It is possible under certain circumstances to circumvent the probate process with specific types of life insurances. While we have data on some of these policies, it is likely that we do not cover all. Second, we trade-off depth and richness of the data against the number of observations in our sample. While this paper benefits from granular information on funeral insurance and household portfolios for example, the treatment effect estimates that we obtain as measures of tax responsiveness are relatively imprecise.

Despite these shortcomings, our results provide interesting insights into insurance as a component of household portfolios in late life and tax policy. Broad tax subsidies for life insurance appear poorly targeted if the objective is asset building: we find little effect on other life insurance or on wealth at death.

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Online Appendix for

"Life Insurance and Death Benefits: What Shapes Participation, and Does It Matter for Inequality?"

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A Data Appendix

A.1 Sampling

The stratified sampling strategy is designed to ascertain that the data better covers the wealth distribution at its extremes. Extreme values are often not included in purely random samples, because in a population with very few extreme values the probability to draw outliers is small. Research on the distribution of wealth uses oversampling in attempts to make wealth surveys more representative. Not at least due to the low probability of drawing a billionaire in a random sample of the population, for example, survey institutes make explicit efforts to include such individuals in the survey by capitalizing on tax data or other external data sources (Vermeulen 2018; Kennickell 2008). To obtain representative results, the population weights are adjusted accordingly, such that the cases with particularly many procedural steps are scaled back to their actual proportion in the population.

Table 6 shows three regression models, where the net probate wealth is regressed on a dummy variable that identifies cases that enter the sample because of the oversampling strategy. In the first column, we report the bivariate correlation, and the second column refers to correlations while controlling for postal code of the last place of residence. The third column refers to a quantile regression on the median value of net wealth. Qualitatively, all models show that the number of procedural steps is positively related to probate wealth. On average, in the first two models, individuals that enter the sample through oversampling leave more than € 1 mio. to their heirs. The final column suggests that the median net wealth is also elevated in the oversampled group.

Table 6: 'Oversampling and mean probate wealth

	Dependent variable:		
	Net wealth		
	LM: no controls	LM: w. controls	Median
	(1)	(2)	(3)
In oversampling	1,092,671.000***	1,110,173.000***	64,260.170***
	(141,257.500)	(150,099.300)	(20,580.460)
Observations	4,629	4,486	4,629
Adjusted R^2	0.012	0.014	0.012
Note:			*p<0.1; **p<0.05; ***p<0.01

A.2 Descriptive statistics

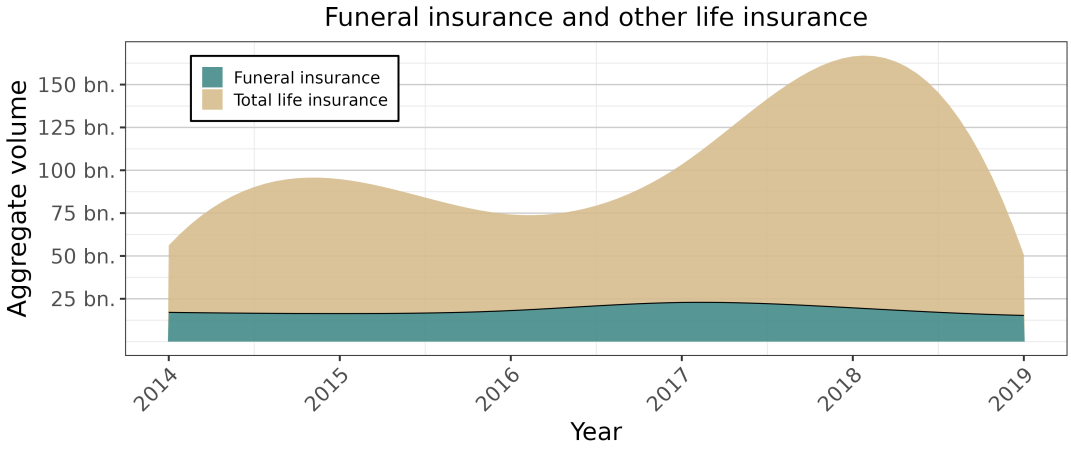
In many other data sources funeral insurances are part of the life insurance aggregate. Figure 5 disentangles these types of insurance. It plots the total volume of life insurance payouts other than final expense insurance policies along the volume of final expense insurance payouts. The estimates result from a scaling exercise with two steps. First, we compute the sum of life and final expense insurance payouts at death at the national level.[17] Then, we use the inverse mortality rate by age groups to obtain a measure of the aggregate among the living. The second step follows the logic of the mortality multiplier method to estimate wealth among the living from data on terminal wealth of decedents.

Figure 5 shows that funeral insurance ranges below 20 billion over time. The estimates of life insurance are much more volatile. In 2014 and 2016, for example, the aggregate value of life insurance other than final expense insurance payouts are below € 50 bio. The estimate peaks at almost € 150 bio. in 2018. The volatility is a result of the fact that we sample from the decedent population, which is already a sample of the

[17] Our dataset covers 7.79% of the relevant Austrian reference population. The HFCS suggests that on average, wealth in the Austrian districts that we do not cover exceeds mean wealth in the 10 Viennese districts of this study by more than 40%. We use this information for a back-of-the-envelope-calculation to derive the national volume.

living. Therefore, outliers are likely to result in more volatile estimates. In Appendix A.2, Figure 6 shows that our aggregate estimate of life and final expense insurance oscillates around the aggregate reported by by the Austrian National Bank and the ECB distributional wealth accounts.

Figure 5: Aggregate value of funeral insurance and other life insurance over the sampling period

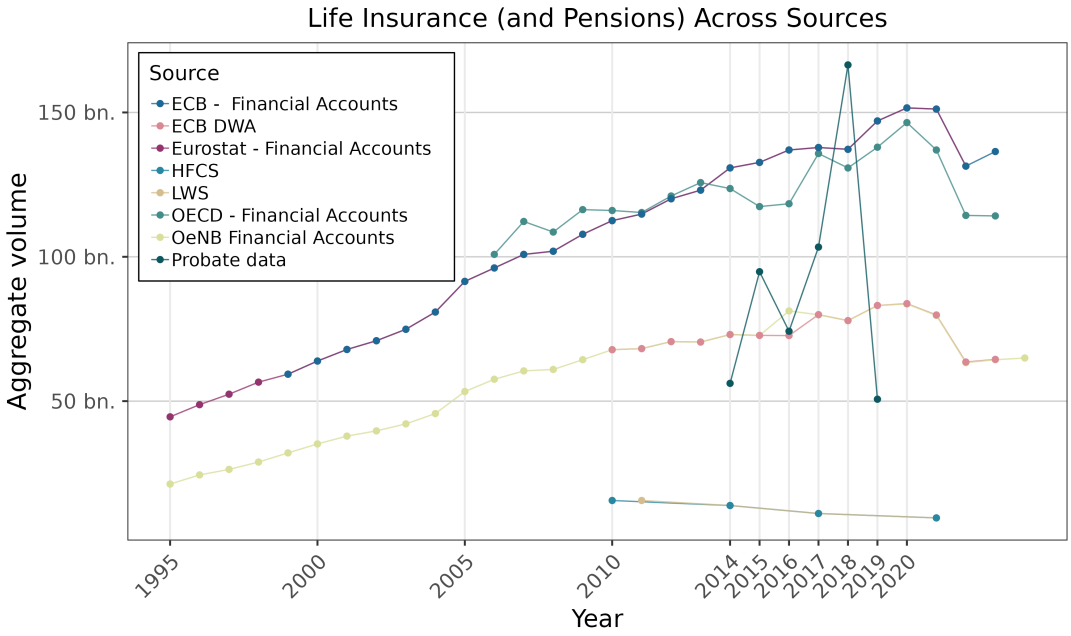


Note: Estimates obtained from weighting observations by the sample weight and the inverse district-specific mortality rate. Wealth outside the court districts in the sample is scaled by 1.4 to reflect higher average wealth outside Vienna (Dabrowski et al. 2020). Smoothed curves are obtained by fitting an FMM cubic spline to the seven yearly observations for each series and stacking the interpolated values.

Figure 6 plots the aggregate value of life insurance implied by the probate data against the volume suggested by other sources, including the financial accounts data and survey data (Morelli et al. 2023). Overall, our data is consistent with the European Central Bank's (ECB) Distributional Wealth accounts estimate and those by the Austrian National bank. They are below the ECB financial accounts, and those compiled by Eurostat and the OECD. This is due to the fact that the latter three aggregates also include other pension products.

Table 7 shows the covariate balance across individuals who pass away with a final

Figure 6: Source comparison on aggregates of life insurance and voluntary pensions.



Note: Probate series estimates obtained from weighting observations by the sample weight and the inverse district-specific mortality rate. Wealth outside the court districts in the sample is scaled by 1.4 to reflect higher average wealth outside Vienna (Dabrowski et al. 2020). Other sources are taken from Morelli et al. (2023).

expense insurance and those who are not covered. We report means for each variable in the third and fourth column, as well as the difference in means in the fifth column. The final column reports the p-values for a two-sided t-test of the differences in means. The table complements the regression analysis in Table 2. However, Table 7 only considers bivariate associations.

Table 8 reports mean funeral expenditures as a share of gross (net) wealth at death. Wealth is measured excluding funeral costs but including the face value of funeral insurance, and results are shown by decile of the gross (net) wealth distribution. In the first column, we drop the first row because the denominator is zero. In the second column, we drop the first three rows because the denominator is either negative or zero.

Table 7: Characteristics of funeral insurance policy holders

Section	Variable	No policy	Policy holder	Difference	p-value
Age	Share 0 to 30 years	0.02	0.01	0.02	0.00
	Share 30 to 60 years	0.12	0.04	0.08	0.00
	Share 60 to 70 years	0.13	0.08	0.05	0.00
	Share 70 to 80 years	0.24	0.24	0.01	0.95
	Share 80 to 90 years	0.25	0.27	-0.02	0.23
	Share 90 to 100 years	0.22	0.34	-0.12	0.00
	Share 100 to 120 years	0.01	0.02	0.00	0.54
	Missing	0.00	0.00	0.00	0.32
Gender	Share male	0.49	0.36	0.13	0.00
	Share female	0.51	0.64	-0.13	0.00
Marital status	Share single	0.36	0.26	0.09	0.00
	Share divorced	0.34	0.50	-0.16	0.00
	Share widowed	0.00	0.00	0.00	0.00
	Share married	0.16	0.14	0.02	0.08
	Share other	0.12	0.09	0.04	0.03
	Missing	0.01	0.01	0.01	0.06
Long-term care need	Share with needs	0.23	0.17	0.06	0.00
	Share without needs	0.32	0.41	-0.09	0.00
	Missing	0.45	0.42	0.03	0.06
Testament	Share with testament	0.68	0.59	0.09	0.00
	Share intestate	0.32	0.41	-0.09	0.00
Made gift	Share made gift	0.95	0.95	0.00	0.85
	Share no gift	0.05	0.05	0.00	0.85
Other life insurance	Share with other LI	0.90	0.72	0.18	0.00
	Share without other LI	0.10	0.28	-0.18	0.00
Duration of probate process	Proceeding duration	477.18	272.03	205.15	0.10
Weight	Weight	9.41	9.56	-0.15	0.12

Note: Means for key sociodemographics for decedents with and without final expense insurance. Difference is the mean among those without final expense insurance minus the mean among policy holders. P-values from Welch t-test. Weights account for stratified sampling.

B Final expenses and insurance

Table 9 offers an overview of the funeral insurance policies offered in Austria in 2017 (Verein für Konsumenteninformation 2017). The table lists the annual premium for a typical contract with for a face value of €5,000.00 and 10,000.00. It also indicates

Table 8: Funeral cost as a share of terminal wealth

Decile gross/net	Share of gross wealth	Share of net wealth
1	-	-
2	981.9%	-
3	264.1%	-
4	136.1%	186.8%
5	83.2%	90.6%
6	46.9%	47.5%
7	22.2%	22.3%
8	7.4%	7.8%
9	3.4%	3.4%
10	1.3%	1.3%

Note:
Deciles based on gross and net wealth, for each column with the corresponding concept. "-" inserted whereever the numerator is zero or negative.

whether a medical questionnaire is required.

Table 9: Final Expense Insurance Comparison (Austria)

Insurer	**Premium/yr (€5,000)**	**Premium/yr (€10,000)**	**Health questions**	**Max. age**
Donau	656.00	1,189.40	No	70-75
ERGO	666.42	1,211.29	No	70-75
Generali	688.58	1,361.58	Yes	80
Helvetia	653.57	1,046.08	Yes	85
Merkur	708.14	1,320.59	No	85
Oberösterreichische	609.65	1,130.04	No	70-75
UNIQA	681.65	1,182.00	No	70-75
Wiener Verein	656.00	1,189.40	Yes	80
Wüstenrot	736.75	1,380.82	Yes	70-75
Zurich	691.10	1,259.95	No	70-75

Notes: Figures are annual premia for stated benefit sums; pricing reference is September 2017. "Health questions" indicates whether medical questions are asked at application. Maximum age refers to the age threshold up to which insurers offer contracts. In some cases, individuals close to the threshold have to pay all premia in one lump sum.
Source: Verein für Konsumenteninformation (2017)

C Model dynamics

Figure 7 illustrates how funeral insurance participation evolves along the distribution of wealth. Each panel illustrates what happens upon varying one of the key model paramters while holding the others constant. The first panel examines changes in β, and the second changes in μ_c. The two lower panels examine the changes in participation along the wealth distribution with either β or μ_c fixed at 0.75, while the price p varies.

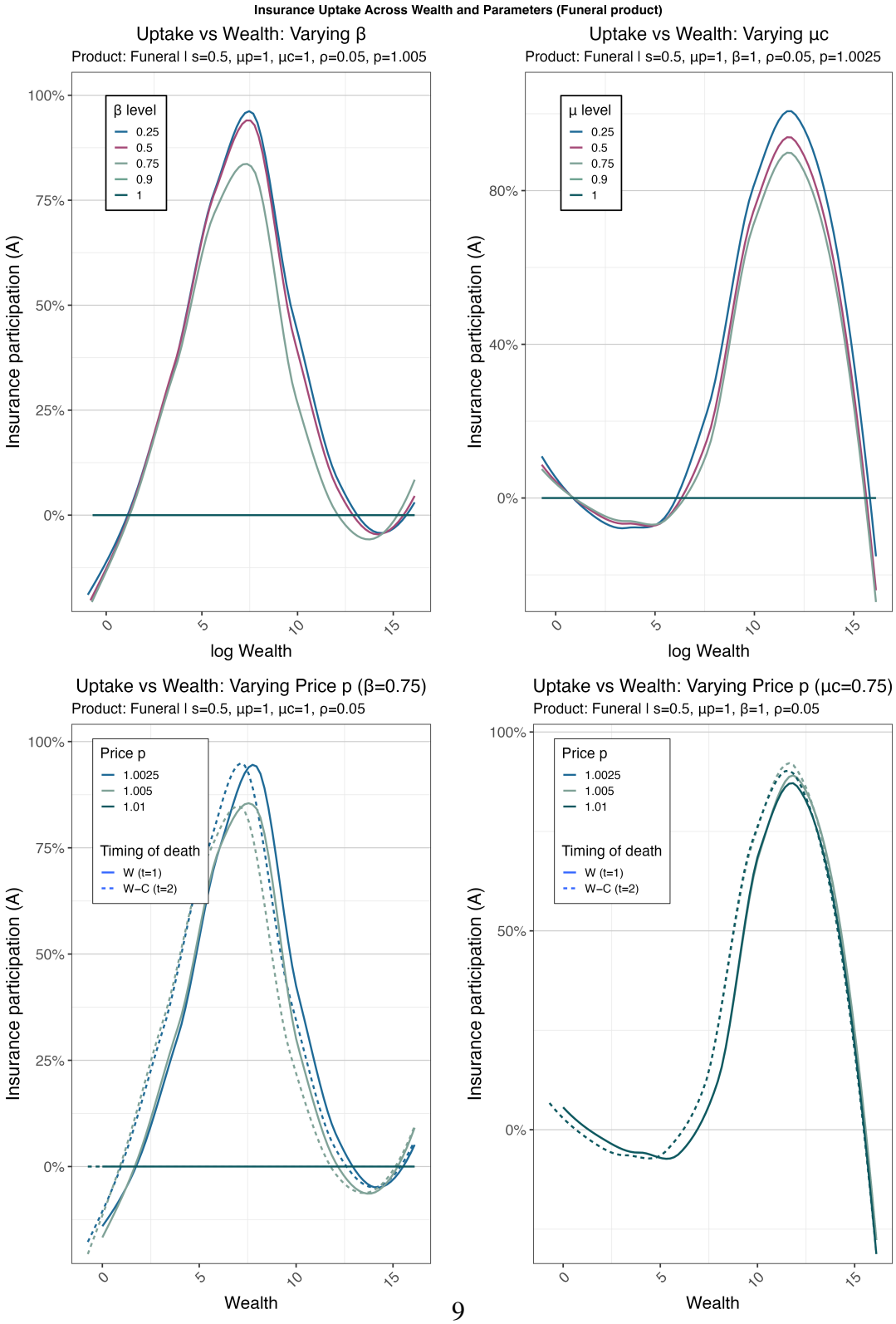
As baseline parameters, we stipulate $s = 0.5$, $\mu = 1$ and $\rho = 0.05$. For the bequest motive, we take the estimates of Ameriks et al. (2011), and set $\phi_1 = 47.6$ and $\phi_2 = 7,280$.

In each panel, we show a loess-smoothed estimate for the mean participation rate. The upper two panels refer to a cross section of individuals dying in the first period with wealth W and the second period where wealth is $W - C$. In the lower two panels, we separate the different death cohorts.

D The 2016 Reform

In addition to changing the incentives for personal insurances, the tax reform also affected other elements of the tax system. First, the tax rates for different income brackets changed. Table 10 illustrates the tax schedule before and after the reform. In addition to changes in the tax schedule, another significant components of the reform concerns the transfer of real estate within the family. Before the reform, property wealth passed on from parents to children was valued at the administrative cadastral value for the property transfer tax assessment. Due to the reform, the valuation changed to market values, which significantly increased the tax on real estate transferred across generations within

Figure 7: Model dynamics



the family.

Table 10: Income Tax Brackets and Rates Before and After the 2016 Reform

Pre-reform (2015)		**Post-reform (2016)**	
Income (€)	**Rate (%)**	**Income (€)**	**Rate (%)**
0 – 11,000	0	0 – 11,000	0
11,001 – 25,000	36.5	11,001 – 18,000	25
25,001 – 60,000	43.214	18,001 – 31,000	35
60,001 – 150,000	50	31,001 – 60,000	42
150,001 – 1,000,000	50	60,001 – 90,000	48
Over 1,000,000	50	90,001 – 1,000,000	50
		Over 1,000,000	55

Rates shown are nominal statutory tax rates across tax brackets. Source: Schratzenstaller (2015).

E Alternative Treatment Effect Estimates

Table 11: ATE Estimates Without Weights (RDD)

	Outcome		
	FI (participation)	LI (participation)	Net Wealth
Treatment at cutoff	0.420*	−0.024	−342.476
	(0.236)	(0.145)	(218.934)
N	2962	2962	2962
Kernel	Triangular	Triangular	Triangular
Observations	32	32	32

Note: Column entries are average marginal effects from probit models in columns (1) and (2) and a linear effect in column (3) measured in thousands of Euros. FI (LI) is final expense (other life) insurance. Robust (HC0) standard errors in parentheses; regressions weighted for stratified sampling. Linear smooth on both sides of the cutoff. All models feature year-of-death fixed effects and court district fixed effects. Individuals aged 80 and older at the time of the reform announcement are excluded from the sample.
*p<0.1; **p<0.05; ***p<0.01

Table 12: ATE Estimates With Controls (RDD)

	Outcome		
	FI (participation)	LI (participation)	Net Wealth
Treatment at cutoff	0.377***	−0.009	229.983
	(0.140)	(0.187)	(145.899)
N	2648	2648	2648
Kernel	Triangular	Triangular	Triangular
Observations	32	32	32

Note: Column entries are average marginal effects from probit models in columns (1) and (2) and a linear effect in column (3) measured in thousands of Euros. FI (LI) is final expense (other life) insurance. Robust (HC0) standard errors in parentheses; regressions weighted for stratified sampling. Each specification features control variables: age, age (squared), marital status, gender, receipt of long term care cash transfer, intestacy, inter-vivos gifting. All models feature year-of-death fixed effects and court district fixed effects. Linear smooth on both sides of the cutoff. Individuals aged 80 and older at the time of the reform announcement are excluded from the sample.
*p<0.1; **p<0.05; ***p<0.01

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