

# Do retirement savings increase in response to information about retirement and expected pensions?\*

MATHIAS DOLLS      PHILIPP DOERRENBERG

ANDREAS PEICHL      HOLGER STICHNOTH

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## Abstract

How can retirement savings be increased? We explore a unique policy change in the context of the German pension system to study this question. As of 2005 (with a phase-in period between 2002-04), the German pension administration started to send out annual letters providing detailed and comprehensible information about the pension system and individual expected public pension payments. This reform did not change the level of pensions, but only provided information to individuals about their expected pension payments. Using German tax return data, we exploit an age discontinuity to identify the effect of these letters on the behavior of individuals. We find an increase in tax-deductible private retirement savings and provide evidence that this is not due to a crowding-out of other forms of savings. We also show that labor earnings, i.e. the most direct way to increase public pensions, increase after receiving the letter.

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\***Dolls:** ifo Institute and IZA. Email: [dolls@ifo.de](mailto:dolls@ifo.de); **Doerrenberg:** ZEW Mannheim, CESifo and IZA. Email: [doerrenberg@zew.de](mailto:doerrenberg@zew.de); **Peichl:** ifo Institute, LMU, CESifo, ZEW and IZA. Email: [peichl@ifo.de](mailto:peichl@ifo.de). **Stichnoth:** ZEW Mannheim. Email: [stichnoth@zew.de](mailto:stichnoth@zew.de). We thank the Research Data Lab of the German Federal Statistical Agency, especially Stefanie Urich, for steady support in accessing the data. Karim Bekhtiar, Sydni M. Pierce, and Christian Skripalle provided excellent research assistance. We are grateful for helpful comments and suggestions by the editor (Magne Mogstad), three anonymous referees, David R. Agrawal, Florian Engelmaier, Johannes Hermle, Hilary Hoynes, Olga Malkova, Katherine Meckel, Sebastian Siegloch, Christian Traxler and various seminar/conference participants. The usual disclaimer applies.

# 1 Introduction

Life expectancies steadily increase and the average age of the population rises in most industrialized countries. This development has severe implications for (pay-as-you-go) pension systems and there is concern that individual savings for retirement are not sufficient (Benartzi and Thaler 2013; Poterba 2014).<sup>1</sup> An important question then is how future pension entitlements can be increased in order to guarantee adequate old-age income for all individuals. In this paper, we study the effect of pension information letters on private retirement savings and labor earnings – the two main instruments to increase future pension levels.

We explore a policy change in Germany which increased information and salience about the pension system. Because of the pension system’s complexity, it is difficult to develop precise expectations about future pension payments without detailed information. In an effort to increase transparency, the German pension administration started to send out annual information letters in 2005 (with a phase-in period between 2002 and 2004, see below). These letters provide detailed and comprehensible information about the pension system in general and several important individualized features. For example, the letters inform recipients about the individual date of statutory retirement, the pension payments that they can expect upon retirement as well as the link between labor earnings, social insurance contributions (which are proportional to earnings in Germany) and expected pensions. Individuals are eligible to receive the letter if they are at least 27 years old and have paid social insurance contributions for at least five years. The reform was phased-in from 2002 to 2004 where all eligible individuals received the letter once in one of the three years depending on their year of birth. This institutional set-up allows us to employ an event study design exploiting that different taxpayers (of different age) receive their first letter in different years.

The introduction of the letters did not change the level of public pensions or the financial incentives for private retirement savings. The letters only made retirement and pensions more salient for individuals and provided them with information about their own future pensions. A recent literature shows that these features alone, i.e. better information about institutional details and more salient policies, can have significant effects on behavior.<sup>2</sup> The related literature in the context of retirement

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<sup>1</sup>We study the case of Germany, where it is generally acknowledged that more private retirement savings are necessary to maintain an adequate level of income for the elderly (see, for example, the government report in German Federal Government 2012).

<sup>2</sup>For example, Bhargava and Manoli (2015) use a randomized experiment in the context of the Earned Income Tax Credit (EITC) in the US to show that providing simplified information about the EITC has a significantly positive effect on the take-up of EITC benefits. Finkelstein

savings points in the direction that information letters might trigger an effect. For example, Goda et al. (2014) conduct a randomized field experiment to study the effects of providing income projections along with general planning information about employer-provided retirement accounts. Their results indicate that contributions to the retirement accounts are affected by projections *and* planning materials, but that the projections alone do not have a significant effect. Duflo and Saez (2003) conduct a field experiment in which randomly chosen individuals are provided monetary incentives to attend seminars that inform about a specific retirement plan. Their findings show that enrollment in the retirement plan increases for treated individuals as well as their peers. Beshears et al. (2015) find that information about the saving behavior of peers affects retirement savings.<sup>3</sup>

While it is theoretically ambiguous whether receiving the letter contains positive, negative or no information for an individual (depending on an individual's initial beliefs), we find suggestive evidence that individuals on average overestimate their expected pensions, implying that the letter represents a negative shock.<sup>4</sup> Moreover, the letters also include a small nudge towards more savings in general (albeit not any specific or tax-preferred form). Given this aim of the policy reform, we start our analysis by studying the effect of the information letters on (tax deductible) private retirement savings. Information on these retirement savings is available in a panel of administrative tax returns.

In a first step, we plot retirement contributions for each age group. This age-savings profile shows an inverted-U shaped pattern with low savings in early years, a peak at around age 45 and decreasing savings afterwards. More importantly, the age-savings profile provides a visual indication of a jump in savings at the age discontinuity between ages 26 and 27. This jump appears to be larger and less smooth than differences in savings between other age groups. In order to provide more evidence in this direction, we employ a placebo-type study where we plot the differences in savings for neighboring age groups over time. This exercise shows that

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(2009) provides evidence that a policy which decreased the salience of driving-toll rates affected the elasticity of driving w.r.t. to the toll rates, and Chetty et al. (2009) show that consumers are not responsive to taxes that are not salient.

<sup>3</sup>Mastrobuoni (2011) shows that in the US workers do not change their retirement behavior after receiving the annual Social Security Statement. Haupt (2014) reports that 12% of survey respondents in Germany stated that they increased (or planned to increase) savings upon receiving the information letter. This is suggestive of a letter effect on retirement savings. Using administrative data and an identification strategy that allows causal inference, we study if these survey responses translate into actual behavior.

<sup>4</sup>This suggestive evidence is based on an analysis in which we simulate pensions for survey participants and compare the simulations with their own expectations as reported in the survey. We find that about two thirds to three quarters of individuals tend to overestimate their expected public pension – see Section 2 for details.

all differences between age groups are small and fairly constant over time – except for the difference between age groups 26 and 27, which increased after 2004 when the letters were sent out annually.

In the next step, we use event-study estimations to provide causal evidence of the letter effect on savings. This research design exploits that different individuals receive the letters at different points of time. Conditioning on individual and year fixed effects, we use the variation arising from the phase-in years 2002-2004 during which different birth cohorts received the letters in different years, as well as the variation over time coming from individuals who receive the letter for the first time as they become eligible in subsequent years. The event-study estimates are small and insignificant for the years before receiving the letter for the first time, suggesting that pre-trends do not confound our results. The estimates for the years following the event are positive and statistically different from zero. After three years, contributions are on average higher by about 15 EUR, or 6% of the total increase in private retirement savings over the period under consideration. Using survey data from the German Socio-Economic Panel (SOEP), we show that total household savings react as well, suggesting that the increase in private retirement savings did not crowd-out other forms of savings (which are not reported in the administrative data). Based on both the administrative and survey data, we also document that gross labor earnings (to which public pensions are closely tied in the German system) increase in response to receiving the letter.

Our paper contributes to the literature on the effect of government interventions on retirement savings. In efforts to improve retirement savings, many governments spend large amounts of money to subsidize savings in retirement accounts. The empirical literature regarding the effect of such subsidies is mixed; individuals' savings behavior does not seem to respond to saving subsidies in the way a neo-classical incentive model would predict (see Chetty 2015 and references therein). Recent studies have shown that policies which do not use subsidies can be more effective to increase savings. For example, there is robust evidence that changing the default in the decision whether to contribute to a private retirement account or not is very effective in increasing savings (Madrian and Shea 2001; Thaler and Benartzi 2004; Chetty et al. 2014). Our paper provides evidence that information provision – another type of non-subsidy policy – affects savings (and labor earnings) as well.

The theoretical mechanisms behind many of the (behavioral) findings are still not fully understood in the literature, and it is also speculative what the main theoretical mechanisms behind our results are; potential candidates include reduced information frictions and higher salience. However, even without a full understand-

ing of the underlying mechanisms, our finding – along with the related literature – has potential policy implications (this is in line with the ”pragmatic perspective” stressed by Chetty (2015, page 14)). One lesson might be that governments may wish to provide better and more transparent information about their policies in general and about retirement systems in particular in order to achieve desired political goals such as increased savings rates. The particular findings of the pension-payment information letters that we study also inform governments in other countries, which followed the German example and introduced comparable letters.<sup>5</sup>

The paper proceeds as follows. In Section 2, we describe the institutional details of the German pension system and the reform that we exploit in this paper. We provide information about the data, outcome variables and key summary statistics in Section 3. The empirical strategy is discussed in Section 4. Our main results are presented in Section 5. Section 6 discusses the size and robustness of the effects. Section 7 concludes the paper.

## 2 Institutional Background

**The retirement system in Germany.** The German pension system, which had traditionally been dominated by a public pay-as-you-go (PAYG) scheme (the so-called Bismarckian system which was implemented in the late 19th century), has been transformed into a three-pillar system over the last decades (see ‘Riester pension reform’ in the next paragraph). The first pillar comprises the traditional government-organized statutory pension insurance system based on PAYG. The second pillar is based on occupational pension plans, where employers support employees in forming retirement payments. The focus of our paper is on the interaction between receiving information about the first pillar and own contributions to the third pillar through private pension plans.

**Riester pension plans.** In 2001, the German government passed the so-called ‘Riester’ pension reform (named after Walter Riester who was the minister responsible for the reform) that strengthened the second and third pillar by partially substituting PAYG financed pensions with funded pensions (see Boersch-Supan et al. 2015 for an overview). While insurance through the statutory pension insurance scheme is compulsory for employees in Germany, signing a contract for a private pension scheme in the second and third pillar of the German pension system is voluntary. Both the second and third pillar are subsidized to incentivize personal responsibility

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<sup>5</sup>Other countries with similar letters include the USA, Finland, Sweden and France. See Larsson et al. (2009) and the (German-language) overview in Schulz-Weidner (2012).

and compensate for decreasing statutory pensions. For the second pillar, the reform introduced the legal right to convert salary into pension contributions and thereby making them exempt from income taxation and social insurance contributions (deferred taxation). For the third pillar, Riester pension plans have been introduced. The contributions to these Riester pension contracts are our outcomes of interest (note that we do not exploit the 2001 reform in our paper; we study the effect of information letters about the public pension arising from the first pillar on Riester contributions). Table 1 gives an overview of the Riester subsidy scheme.

Contributions to a Riester retirement account are directly subsidized with a basic subsidy and an additional child subsidy for individuals with children.<sup>6</sup> In order to receive the maximum direct subsidy, individuals have to contribute a certain share of their gross earnings to the retirement account.<sup>7</sup> In addition to the direct subsidy, contributions to Riester pension plans can be deducted from the income tax.<sup>8</sup> The overall subsidy is the sum of the direct subsidies and the tax allowance.<sup>9</sup>

**The treatment: information letters.** One important component of the 2001 pension reform was the decision to send out annual pension information letters as of January 2005. The purpose of these letters was to provide more transparent information about the complex German pension system. With their introduction, the German government thus took account of the increased information needs of the population that arose as a consequence of the new structure and more complex

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<sup>6</sup>The maximum basic subsidy has been raised from 38 Euro in 2002/2003 to 154 Euro from 2008 onwards. It is twice as large for married couples if they sign two separate Riester contracts. Contributors who have children additionally receive a child subsidy, which was 46 Euro per child in 2002/2003 and has been raised to 185 Euro (300 Euro for children born after 2007).

<sup>7</sup>This contributed amount has to be 4 % (since 2008, it has been increased from 1% since 2001) of gross earnings but not more than 2100 Euro. Direct subsidies received are counted as part of the contribution. It is possible to contribute more than the maximum amount to the retirement account but that does not increase the subsidy. The subsidies are proportionally reduced if the total contribution (own contribution + direct subsidies) is below the required contribution for the maximum direct subsidies.

<sup>8</sup>See Doerrenberg et al. (2016) for an overview of the German personal income tax and deduction possibilities. The deduction is capped at a maximum amount which has been raised from 525 Euro in 2002/2003 to 2100 Euro in 2008. The tax deduction is calculated as the difference between the regular tax burden without a Riester contract and an adjusted tax burden with a Riester contract. The direct subsidy is added to the latter.

<sup>9</sup>For illustrative purposes, consider the following example (Corneo et al. 2015): A childless single has gross earnings of 60,000 Euro in 2008 and the tax rate is 50%. The regular tax liability without a Riester contract is 30,000 Euro. The maximum subsidized saving amount is 2,100 Euro, i.e.  $\min(60,000 \times 0.04, 2100)$ . In order to receive the maximum basic subsidy of 154 Euro, the own contribution has to be 1,946 Euro ( $= 2100 - 154$ ). The adjusted tax burden amounts to  $(60,000 - 2,100) \times 0.5 + 154 = 29,104$  Euro. The tax allowance then equals  $30,000 - 29,104 = 896$  Euro, and the overall subsidy is  $154 + 896 = 1,050$  Euro.

design of the German pension system.<sup>10</sup>

The pension information letters are sent to every insured person that fulfills two eligibility criteria: the individual (i) has to be 27 or older and (ii) must have paid social insurance contributions for at least five years. Civil servants and those self-employed individuals that are not insured in the German statutory pension insurance do not receive information letters. The information letters complement so-called pension statements that have been sent every three years to insured people aged 55 or older already before the introduction of the new letters and that still exist today.<sup>11</sup>

The new pension information letters were gradually introduced through a test phase that started in the second half of 2002 and ended in 2004. All individuals who fulfilled the eligibility criteria received one information letter during the phase-in period. In 2002, individuals born in the years 1969-1975 or 1938 or before received an information letter (i.e. individuals aged 27-33 or 64 or older in 2002). In 2003, the pension administration sent information letters to individuals born in the years 1950-1968, 1976 or 1939 (i.e. individuals aged 35-53, 27 or 64 in 2003). In 2004, information letters were sent to the birth cohorts 1940-1949 and 1977 (i.e. individuals aged 55-64 or 27 in 2004).<sup>12</sup> Starting in 2005, the statutory pension insurance scheme has sent out annual letters to all insured individuals who are eligible.<sup>13</sup>

The letters contain a rich set of information – comparable to the annual Social Security Statement in the US (Mastrobuoni 2011). Figures 1, 2, and 3 show an example of an information letter. For instance, the letter includes information about the pension an individual would receive today in case of immediate full disability as well as current accrued and expected future pension rights. The latter are calculated based on the assumption that future earnings correspond to the average earnings of the previous 5-year period. In the basic scenario, there is no future adjustment

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<sup>10</sup>Haupt (2014) provides survey evidence that Germans indeed think that the pension system is very complex and complicated. Below we show some evidence that a vast majority of individuals tend to overestimate their expected pensions.

<sup>11</sup>To be precise, the 'old' pension statements contain more detailed information, for example on covered earnings, and replace the information letter in three-year intervals at the age of 55, 58, 61 and 64. This pre-existing policy provides a potential second discontinuity. However, since all 54 year olds receive their first letter at the same point of time, an event study design is not possible as we cannot separate age and event time at this cut-off. In addition, visual evidence from age-savings profiles (see below) is not 100% indicative of an effect at this older discontinuity. The focus of our paper is therefore at the age cut-off around 27.

<sup>12</sup>According to the pension administration, there were only minor deviations from the cohort-based approach described above, restricted to 2002/2003, namely in those cases where individual accumulated pension rights had to be clarified before the information letter could be sent out.

<sup>13</sup>Since March 2012, insured people have the additional possibility to access their information letter online at any time. As of 2016, about 42 million information letters are sent out every year.

of pensions taken into account. In two additional scenarios, future accrued pension rights are calculated based on assumed yearly pension adjustments of one and two per cent. It is explicitly stated that future pension adjustments are uncertain from today's perspective and that the adjustment factor does not account for the loss in purchasing power.<sup>14</sup> The letters further contain information about pension contributions paid so far and resulting earnings points that determine future pension rights. The letter also provides information about the growing pension gap which follows from the fact that future pensions will grow at a lower rate than wages. The importance of additional retirement savings is emphasized together with the note to account for the loss in purchasing power when planning for old-age. Importantly, the letters do not inform about specific government-subsidized private pension schemes such as the Riester pensions.

**Pension Expectations.** If individuals had no information or wrong expectations about their future pension level, the information provided in the letter may lead to an adjustment of savings behavior. A natural question to ask is whether the personalized pension information in the treatment letters constitutes a positive or negative shock to pension expectations, relative to the priors and expectations before receiving the letter. If individuals have accurate expectations, the letter does not provide new information. The letters would make the pension issue salient in this case, but without any need to re-optimize or to adjust savings. If people overestimate their future pensions, however, the receipt of the letter may nudge people to engage in additional private retirement savings. Inversely, the letter should lead to a reduction in savings for individuals who had underestimated the level of their future public pensions.

Existing evidence on the accuracy of pension expectations in Germany is scarce. Haupt (2014) shows that almost 85% of the respondents of the German SAVE survey in 2011 state that they find the information on their projected public pension reported in the pension information letter “(very) helpful”. Pension projections are considered to be the most important information in the information letter.<sup>15</sup> This indicates that a significant fraction of respondents had some uncertainty about their pension claims prior to receiving the information letter.

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<sup>14</sup>The pension adjustment primarily depends on the development of gross wages in Germany. Additional factors that are taken into account are changes in the contribution rate for the German statutory pension insurance scheme and the ratio of contributors and recipients (the latter known as the so-called sustainability factor).

<sup>15</sup>Haupt (2014) reports that 77% of the SAVE respondents find the information on the projected disability pension “helpful” or “very helpful”, 60% the information on potential pension adjustments, 55% the hint on additional need for private retirement savings, and 48% the information on the loss in purchasing power.

To shed some light on the accuracy of pension expectations, we exploit data from the “Survey of Health, Ageing and Retirement in Europe” (SHARE) that can be linked to administrative records from the German Pension Insurance.<sup>16</sup> We calculate the expected net pension based on the reported expected net replacement rate and net earnings of the respondents and compare this expected pension with the projected value respondents obtain in their pension information letter.<sup>17</sup>

Table 2 reports the share of survey respondents that overestimate their projected public pension at mandatory (column 1) and expected (column 2) retirement age. We focus on the first two waves of the SHARE survey from 2004 and 2006/2007 as these years correspond with the savings and earnings data we exploit in our main empirical analysis. We find that the share of respondents overestimating their projected pension at mandatory retirement age slightly declines from 61.3% in wave 1 to 57.9% in wave 2. Interestingly, this share remains constant at roughly 71% when we compare respondent’s pension expectations with the projected pension at their expected retirement age. Our results suggest that there is a tendency to overestimate projected public pensions, even though one should bear in mind the small number of observations ( $N = 111$  in wave 1 and  $N = 152$  in wave 2). Therefore, our hypothesis is to find, on average, an increase in retirement savings after receiving the letter.

### 3 Data, Outcomes and Summary Statistics

**Data set.** We use the German Taxpayer Panel, an administrative data set provided by the German Federal Statistical Office. The data set is based on the universe of personal income tax returns (Kriete-Dodds and Vorgrimler 2007). The unit of

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<sup>16</sup>SHARE is a cross-national panel survey with a focus on the old-age population. The survey contains a question on the expected net replacement rate of the statutory pension insurance. The question reads: “*Thinking about the year when you will collect this pension, approximately, what percentage of your last net earnings will your public old age pension amount to?*”

<sup>17</sup>The administrative records contain all relevant information on the earnings biography of the SHARE survey respondents and their accumulated pension rights to simulate the projected public pension that appears in the pension information letter. As described above, the letter reports a projected public pension which is based on the current accrued and expected future pension rights assuming that future earnings equal those in the previous 5-year period prior to receiving the letter. In the information letter, it is explicitly stated that social insurance contributions for public health and nursing care and, if applicable, income taxes need to be deducted from the reported gross pension in order to obtain the net pension. Therefore, we simulate both the projected gross and net pension. The projected public pension reported in the information letter is based on the assumption that the insured person retires at the mandatory retirement age. It could be the case, however, that respondents plan to retire before reaching the mandatory retirement age when answering the question on the expected replacement rate of their public pension. In this case, they have to accept deductions due to early retirement. We therefore additionally simulate a projected pension if people retire at their stated expected retirement age.

observation is the taxpayer, i.e., either a single individual or a couple filing jointly. The data set is a balanced panel covering all German tax units filing tax returns in the period 2001 to 2010. We have access to a 5% stratified random sample of the Taxpayer Panel and employ the respective population weights provided by the Statistical Office in all calculations. Unfortunately, the data is only available as a balanced panel, which implies that it only includes taxpayers that file a tax return in all ten years of the panel. The data contain all information necessary to calculate a taxpayer's annual income tax. This includes basic socio-demographic characteristics such as birth date, gender, family status, number of children as well as detailed information on income sources and tax base parameters such as work-related expenses and deductions.

**Outcome Variables.** We study the effect of the pension information letters on various outcome variables included in the tax return data. The main outcome variable throughout the paper is the contribution to a Riemer pension account (excluding subsidies). We focus on the retirement savings of the household head in order to have adequate comparisons between households of different sizes.<sup>18</sup> In addition to studying the effect on total contributions to the Riemer retirement account, we also explore if the extensive margin of contributions, i.e., whether to contribute to the Riemer pension scheme account or not, is affected by the information letters. Labor earnings, which we also study, are measured as gross annual earnings of the household head.

**Sample selection.** The general sample is restricted to taxpayers who are between 16 and 70 years of age. We have to exclude a few observations due to data errors; these particularly include individuals with implausible values in demographics (changing date of births or gender). In years when individuals do not report any Riemer savings, these variables are coded as zero. Our final sample from which we can draw for our analyses includes about 7.15 million observations, i.e. 715,000 observations per year.

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<sup>18</sup>There are additional savings variables which we could potentially study: total direct subsidies, i.e. the sum of the basic and the child subsidy, the special expense deduction, the tax allowance as well as the total subsidy (see above for the detailed meanings of these variables and how they are related). We focus on Riemer retirement savings because these other variables are mostly mechanically related to the Riemer savings. Note that we do not observe contributions to occupational pension schemes, the second pillar of the German pension system, in the tax data. The reason is that they are directly deducted from gross income by the employer and hence do not appear in the income tax data.

**Summary statistics.** Table 3 shows summary statistics for the total contributions to the Riester retirement account and the share of all household heads who save through this scheme for the age group of 23-31 years that we focus on in our event-study analyses (see below). Given that the reform was passed in 2001 and Riester pension plans introduced in 2002, it is not surprising that the share of Riester savers increased substantially between 2002 and 2010 from 4.75% to 30.62%. The average total amount of contributions to the Riester account (including zeros for individuals who did not have a Riester account) also increased during this period, from about 11.80 EUR in 2002 to 273.90 EUR in 2010. Average contributions among those with positive contributions are naturally higher: the average contribution rose from 244.15 EUR in 2002 to 898.80 EUR in 2010 in this group. The equivalent summary statistics for the total population are similar. The strictly increasing trend over time shows the importance of establishing a credible research design to study the effects of the pension-information letters; a simple before-after analysis will be confounded by the overall time trend.

## 4 Empirical Strategy

We employ a within-person event-study design to estimate the causal effect of receiving the letter on individual behavior. We define an event by constructing a dummy variable indicating if an individual  $i$  received a letter in year  $t$  for the first time. Thereby, we exploit the phase-in period where different age cohorts received the letter for the first time in different years during 2002-2004. In addition, the design uses the variation over time arising from individuals who receive the letter for the first time as they become eligible in different years. In order to have individuals sufficiently close around the age-discontinuity, we restrict the sample to individuals aged 23–31 years in the baseline estimations.<sup>19</sup> The control group for an individual receiving a letter for the first time in a given year consists of individuals who receive the letter in some other year. The identifying assumption behind this approach is that the year of receiving the letter for the first time is not systematically related to retirement-saving behavior.

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<sup>19</sup>This restriction avoids comparing individuals in their 20s with individuals in their 40s. In addition, only in this age group there is an inflow of individuals experiencing the event for the first time also after the phase-in period (those individuals who turn 27 and have paid social insurance contributions for at least 5 years).

Formally, we estimate the following non-parametric regression equation:

$$\phi_{it} = \alpha + \sum_{k=-3}^3 \beta_k \cdot \chi_{i(t+k)} + \eta_t + \gamma_i + \epsilon_{it}, \quad (1)$$

where  $\phi_{it}$  is our outcome of interest – usually the amount of private retirement savings of person  $i$  in year  $t$ . The explanatory variables of interest are the event-time indicators,  $\chi_{i(t+k)}$ , i.e., a set of dummy variables that capture the years before and after individual  $i$  experienced the event. Dummy  $\chi_{i(t+k)}$  equals one if individual  $i$  receives a letter in  $t - k$  for the first time. The dummy variable indicating the year prior to the event,  $\chi_{i(t-1)}$ , is omitted from the estimation, implying that all effects are relative to the year before the reform.  $\gamma_i$  contains a full set of person fixed effects and  $\eta_t$  are year fixed effects. The year fixed effects allow us to take the strongly (non letter related) rising time trend in Riestert savings into account.

The coefficients for the dummy variables capturing years before the event allow us to check for any trends that might be apparent before receiving the treatment. To preview our findings, we find that the coefficients in the pre-event periods are small and statistically insignificant. One might be worried that finding an effect of receiving the letter on individual behavior reflects an age effect of increasing savings (and earnings) around the cut-off of 27. If our results were merely the reflection of an age effect, we would expect this effect to operate in both the pre- and the post-event periods (why should it start exactly after 27?). Yet, this does not seem to be the case. One reason for this is that our event-study regressions condition on individual and year fixed effects which, taken together, implicitly control for age effects. In addition, due to the phase-in period, we also have individuals receiving the letter for the first time at different ages in our analysis. Nonetheless, we also estimate specifications in which we control directly for other control variables (in particular income) as well as (non-parametrically) for age. The results are robust to the inclusion of these controls confirming our view that our results are not simply reflecting an age effect.<sup>20</sup>

Note that we do not observe directly in our tax return data whether an individual actually received (or read) a letter. We observe the age of the taxpayer (the first eligibility criterion). The second eligibility criterion (having paid at least 5 years of social insurance contributions) can be checked indirectly in the data due to the deductibility of previous social insurance contributions. Given the balanced panel structure of the data, we track all individuals for the whole sample period

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<sup>20</sup>Additional indication that age effects do not explain our results are provided in the next section (5.1) where we show that differences between several age groups only arise for the 26 vs 27 group and only after 2004.

starting in 2001 which implies that we know whether individuals paid social insurance contributions in 2000. It follows that for the years 2002-2003 we cannot rule out that some individuals are erroneously assigned to treatment, either because the pension administration had to clarify individual accumulated pension rights and hence deviated from the cohort-based approach during the phase-in period (which was, however, relatively rare; cf. Section 2) or because the individual had not accumulated 5 years of social insurance contributions.<sup>21</sup> In addition, we never observe whether an individual receiving a letter actually read it. Hence, we might assign someone to experience the event although she has not received (or read) a letter. All this implies that we estimate an intention-to-treat (ITT) effect. This is a conservative approach as the ITT underestimates the conventional treatment effect relative to a situation where assignment to the treatment group is based on actually receiving and reading a letter.

## 5 Empirical Results

### 5.1 Age-Savings Profile

We start our empirical analysis by providing some descriptive evidence by plotting an age-savings profile in order to visually identify possible jumps at the age discontinuity (26 vs. 27). Figure 4 plots average Riester retirement savings over the entire age distribution. The blue dots present the years 2002-2004, i.e., the phase-in period during which all eligible individuals received the letter once. The red dots present the years after 2004 during which all eligible individuals receive an annual letter. The age-savings profile first reveals that retirement savings are, on average, higher in the period after 2004 than before. This corresponds to the summery statistics and is not surprising given that the Riester scheme has generally become more popular since its introduction in 2001. We further observe an inverted-U shape for the years after 2004, showing that savings are low for younger age groups, peak around age 45 and then go down again – this is a pattern we would expect and which is known from other studies. We are particular interested in the cutoff of receiving a letter around ages 26 and 27. The figure is suggestive of a jump in savings around this age cutoff. This jump seems to be discontinuous and not in line with the more smooth relationship between age and savings that is observed around other ages. This is a

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<sup>21</sup>Given the balanced panel structure and the fact that people with labor earnings paying income tax in Germany always have to pay social insurance contributions, individuals who had not accumulated 5 years of social insurance contributions in the phase-in period do so in the subsequent years. Hence, we might assign them to treatment one or two years too early (as of 2004 we know whether an individual has at least 5 years of contributions).

first hint pointing in the direction that the letters indeed affect retirement savings. Based on this figure, we are able to estimate a regression-discontinuity (RD) effect for the 26-vs-27-years discontinuity. The corresponding RD estimate is 21.2 (with an standard error of 10.3).

For further visual evidence and in order to shed light on general age effects, we plot the differences in retirement savings between different age groups in each year in the data. In particular, for each year we display the difference in means between age groups 23 vs 24, 24 vs 25, 25 vs 26, 26 vs 27, 27 vs 28, 28 vs 29 and 29 vs 30. In case of a zero letter effect and in the presence of pure age effects, the differences between all these age groups would be comparable and constant over time. Figure 5 shows that the differences between these age groups are usually very small, except for the difference between 27 year olds vs 26 year olds. The difference becomes larger in 2005 (i.e., after the phase-in period when the annual letters were introduced) and remains at a larger level than all other differences in the years thereafter. The difference between the groups around the relevant cutoff (26 vs 27) is more than three times as high in later years than the largest differences of other age groups. This exercise is like a placebo study showing that differences between different ages are only visible for the age group where the letter treatment actually occurred. The exercise also shows that the difference between 26 and 27 year olds only becomes large in the later years when the letters are sent out annually; this suggests that there is no general systematic difference between 26 and 27 year old people. All together, this is indicative of an actual letter effect, rather than a simple age effect.

## 5.2 Event-Study Estimates

The key issue with the descriptive results presented so far is that we do not have pre-reform years for those who turned 27 in 2002 or before in our data. Fortunately, we can exploit that different individuals received the letter for the first time in different years. Moreover, the phase-in period provides us with variation in the age of individuals who are receiving the letter for the first time. This allows us to separate age and time effects in order to estimate a causal effect of receiving the letter on individual behavior.

We estimate within-person event-study regressions controlling for year and individual fixed effects. Figure 6 depicts the event study coefficients with Riester retirement savings as the outcome variable. We observe small and insignificant estimates for the years before receiving the letter for the first time, suggesting that there are no pre-trends which might confound our findings (and no age effects; as

discussed before). For the years after experiencing an ‘event’ the coefficients become larger and distinguishable from zero. The effect is around 3.4 EUR in the year of the event and then steadily goes up to 14.3 EUR three years after the event. The results are robust to including age and other control variables in the specification. All corresponding regression results are shown in Table 5 (Columns 1 and 2).

We also study the effect on the extensive margin of contributing a positive amount to the retirement account or not; that is, the outcome variable is a dummy indicating whether an individual has positive Riester retirement savings. The corresponding event study is shown in Figure 7. We observe a jump in the extensive margin in the years after the reform; three years after the reform the event study estimate is around 1.5, indicating that the letter increases savings on the extensive margin by about 1.5 percentage points. The pre-trend, however, is not 100% satisfying here: while we do not see a significant effect for the year -3, the effect at year -2 is small but statistically different from zero. However, we interpret the sharp jump after the event as an indication that the letter indeed affects the extensive margin. All corresponding regression estimates are also shown in Table 5 (Column 3).

## 6 Discussion

### 6.1 Size and Robustness of the Effects

Our event study analysis shows that three years after the first receipt of the information letter, Riester pension savings increase by 14.3 EUR relative to the year before the receipt of the first letter. The effect is statistically significant and, despite the small absolute amount, non-negligible in relative terms. The effect of the information letter corresponds to 5.5% of the average increase in Riester contributions of those aged 23-31 over the whole sample period (see Table 3). The extensive margin response of 1.5 percentage points three years after the first receipt of the information letter accounts for 5.8% of the total increase in the share of taxpayers with positive Riester contributions.

Another way to assess the size of the savings effect and the efficiency of the information letters is to conduct a back-of-the-envelope calculation of the fiscal costs needed to trigger a savings response of this magnitude. Using Danish data, Chetty et al. (2014) show that financial subsidies are relatively ineffective in raising retirement savings. They estimate that \$1 of government subsidies increases total saving by only 1 cent. Extrapolating their estimate to our savings effect implies that 1430 EUR in government subsidies were needed in order to raise retirement savings by 14.3 EUR. While any such extrapolation has to be taken with a grain of salt, the

comparison does suggest that the information letter is rather cost-effective. In fact, the extra financial costs for sending out the information letters are probably very small.<sup>22</sup>

We believe that for the interpretation of the size of this effect, it is important to bear in mind that Riester contracts are only one possible way to engage in additional retirement savings. We have focused on Riester savings so far as those are precisely reported in our tax return data. However, there are many other savings schemes such as equity funds or traditional bank savings plans that can be used for retirement savings. Unfortunately, such information is not available in the administrative tax return data. We therefore use survey data from the German Socio-Economic Panel (SOEP) to study the effect on total savings. We can thereby check whether the increase in Riester savings simply crowds out other forms of saving – not observed in our administrative data – or is accompanied by an increase in total savings. The SOEP is a longitudinal survey of private households, with a rich set of information on personal and household characteristics.<sup>23</sup> Every year, the SOEP contains a question about household savings: “Do you usually have an amount of money left over at the end of the month that you can save for larger purchases, emergency expenses or to acquire wealth?” We multiply this number by twelve to arrive at a measure of yearly savings.

In our SOEP estimations, we mimick the sample selection from our main analysis as closely as possible. We keep only the head of each household and construct a balanced panel around the receipt of the first letter. As in the main analysis, we identify the year of the first letter based on the year of birth. In addition, the SOEP allows us to directly identify the restriction that individuals must have paid pension contributions for at least five years. Finally, we need to allow for the fact that almost all SOEP interviews take place in the spring – almost 90% of households are interviewed by May. As the pension letters are sent out throughout the year (and the phase-in in 2002 started in the second half only), many households will not have received the first pension letter by the time they are interviewed in the SOEP. We therefore shift the event time by one year, so that for people who receive the

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<sup>22</sup>Before sending the first information letter, the pension administration needs to make sure that the complete employment biography of the insured is taken into account. However, this clearing of the pension accounts has to be done anyway at some point before the person retires. The annual update of the pension account is unlikely to represent substantial (extra) costs because employers report the necessary information to the pension administration anyway, regardless of the information letter. The only true extra cost is for printing and mailing the information letter. At one double-sided page and standard postage (with probably a substantial bulk-mail discount), this extra cost is probably very small, to the order of EUR 1 at most. (We were unable to get information on the precise amount from the pension administration.)

<sup>23</sup>See Wagner et al. (2007) for a detailed description.

first letter in, say, 2003, an event time of 0 corresponds to the year 2004.

Bearing these minor differences in mind, we find a striking similarity in the movement of the response of Riester savings in the administrative data and self-reported total savings in the SOEP; see Figure 9 where we plot both the event-study results for Riester savings based on the tax-return data and the results for total savings based on the survey data. As in our main analysis, the pre-trend is flat and statistically insignificant. In the year in which the first letter is received, there is an increase in households savings of slightly less than 100 EUR (not significant at conventional levels, however, with a p-value of 0.22). In  $t = 1$ , then, total savings are higher by 286 euros per year (p-value 0.02), and this increases to about 350 euros in  $t = 3$  (p-value 0.13). Again, the results are robust to including (non-parametric) age groups as control variables. The corresponding regression results based on SOEP data are displayed in Table 6 (Columns 1 and 2).

This increase in  $t = 3$  represents 10-15% of annual savings as measured in the SOEP (cf. Table 4). However, both the absolute and the relative magnitude of household savings should be interpreted with some degree of caution because they rely on answers to a survey question that is open to interpretation, unlike in the administrative dataset that we use for our main analysis. For instance, there are respondents in the SOEP who declare zero savings even though they report positive Riester contributions elsewhere in the questionnaire.<sup>24</sup> These respondents probably took the question to refer to the money that is left over after all regular payments, including those to a Riester savings account. Note, however, that in case of such an interpretation, a stable or even increasing amount of annual savings is even stronger evidence that the increase in Riester savings did not crowd out other forms of savings.

## 6.2 Additional Channel: Labor Earnings

As noted above, the most direct response to a negative shock about the expected level of one's public pension is to increase pension contributions. With some exceptions, the only way to do so in the German pension system is by increasing gross earnings. To shed light on the effect of the letters on earnings, we use the equivalent event-study strategy as before but put gross earnings of the household head as the

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<sup>24</sup>Unfortunately, the SOEP only contains information on the amount of Riester savings starting with the wave of 2013, which means that we cannot currently study the effects of the pension letters on Riester savings directly in the SOEP. This will become possible once enough waves are available for an event-study design. However, the variation will then be limited to the 27-year-olds and those completing the required five years of pension contributions. The substantial variation due to the test phase between 2002–2004 that we exploit in the present paper will not be available.

dependent variable. The corresponding results from our administrative tax-return data are reported in Figure 8. The pre-trend in all three years before receiving the letter for the first time is flat with insignificant coefficients. In the first year after the event, gross earnings jump up to 600 EUR and then continue growing to around 1000 EUR three years after the event. This is equivalent to 83 EUR per month, or about 3% of average earnings in our estimation sample (see the rightmost column in table 3 for basic summary statistics on the earnings variable). The results are also robust to conditioning on age and other control variables. All corresponding regression estimates are shown in Table 5 (Columns 4 and 5).

The positive effect on earnings is confirmed in the SOEP survey data. As Figure 10 shows, the pre-trend in earnings is statistically insignificant while there is a statistically significant effect in both  $t = 0$  and  $t = 1$ . In the following two periods, the effect is still positive, but only significant at the 10% level (p-values 0.077 and 0.057). The point estimates in the SOEP tend to be a little larger (in absolute value) than in the administrative tax data, both in the post-event period and prior to the reception of the first letter. However, the coefficients obtained based on the administrative data always fall within the 95% confidence intervals around the SOEP estimates. Again, the results are robust to including (non-parametric) age groups as controls. The corresponding regression results based on SOEP data are displayed in Table 6 (Columns 4 and 5).

### 6.3 Timing of the Response

Why does the full effect of the letter not materialize immediately and then stay constant at its level in the event year  $t = 0$ ? We see two complementary reasons for this. First, some people probably only react to the second or third letter that they receive. The test phase creates complex dynamics here: while for everyone  $t = 0$  corresponds to the year in which the first letter was received,  $t = 1$  corresponds to the year of the second letter only for those individuals who receive the first letter in 2004 or after. In contrast to this, individuals who received the first letter in 2002 had to wait three years for the second letter, and individuals first treated in 2003 had to wait two years.

A second reason for the increase over the post-event period is that even the people for whom the first letter is motivation enough need time to collect information about the best way to increase and invest saving. This is particularly true for Riester savings, where there are many different products from different financial institutions.

## 7 Conclusion

As of 2005 (and with a phase-in period before), the German pension administration started to send out annual letters that informed about the pension system and provided personalized information about (expected) future pension payments. The information letters presumably increased the level of information about individual pension claims and made the issue of retirement savings more salient, motivating us to hypothesize that contributions to a private retirement account are affected by the information letters. Exploiting within-person variation over time, we use event-study regressions coupled with administrative tax returns and survey data to study the effect of the first receipt of the letter on contributions to a private retirement account and labor earnings. Our findings indicate that the letters have a positive effect on both variables. The survey results for the effect on total savings suggest that the increase in retirement contributions does not crowd out other savings margins.

The savings and labor supply responses are likely driven by reduced costs of information acquisition, salience effects or a combination of both, but we can only speculate about the exact mechanisms. We found some suggestive evidence that the majority of respondents to the SHARE survey overestimate their projected public pension. Moreover, pension projections are considered to be the most important information in the letter (Haupt 2014) which suggests that information provision indeed might play a role in triggering savings and labor supply responses. In addition to this information channel, the letters may have an effect because they make the issue of retirement savings more salient. Receiving the letter may bring the issue of retirement on the table and nudge people to think about their retirement plan. Our findings have practical value even in the absence of an understanding of the underlying mechanisms: Increasing private retirement savings is a policy goal nowadays as public pensions alone cannot guarantee adequate old-age income anymore due to demographic change. Our findings provide guidance how policies could be designed that effectively increase future pension entitlements. In emphasizing the practical value of our findings even in the absence of a clear-cut identification of the exact mechanisms, we adopt the “pragmatic perspective” of Chetty (2015, page 14) who, in the context of the positive saving effect of default changes, stresses that “given an exogenous policy objective of increasing saving, this empirical finding has practical value even if the underlying behavioral assumptions remain debated.”

Note, though, that it is unclear if sending information letters in all spheres of policy is the ‘golden’ way to inform people and nudge them to take-up policies (non-take-up of policies is large; this is for example discussed in Bhargava and Manoli 2015). Suppose governments would considerably scale up the use of information

letters and send letters on (too) many different topics and policies. It is likely that the effect of each single letter would weaken over time as people get used to such letters and treat them as ‘spam’, with the effect that people do not respond in the way the government desires. A further complication of scaled-up letter use arises if different policies have different goals and different letters would nudge people in different directions. In the context of our set-up, however, the problems mentioned above are likely not to play a role (yet). The German government is very temperate in sending letters to the population, which suggests that the information letters that we study are indeed not perceived as ‘spam’. We also do not know of other letters or actions that might nudge people in a different direction than the pension information letter.

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# Figures and Tables

## Figures

Figure 1: The treatment letter: overview

Versicherungsnummer: [REDACTED]

Deutsche Rentenversicherung Bund

Postfach 2, 10709 Berlin  
Postfach 10704 Berlin  
Telefon 030 865 90511  
Telefax 030 865 27240  
Servicetelefon 0800 100048070  
www.deutsche-rentenversicherung-bund.de  
dru@drv-bund.de  
Datum: 10.05.2012

Deutsche Rentenversicherung Bund 10704 Berlin  
DV 05 055 Deutsche Post  
\*440 0041779 15.05.12  
13351 Berlin

### Ihre Renteninformation

Sehr geehrter Herr [REDACTED]

In dieser Renteninformation haben wir die für Sie von 01.10.1974 bis zum 31.12.2011 gespeicherten Daten und das geltende Rentenrecht berücksichtigt. Ihre **Regelaltersrente** würde nach Erreichen der Regelaltersgrenze (04.04.2021) am **01.05.2021** beginnen. Änderungen in Ihren persönlichen Verhältnissen und gesetzliche Änderungen können sich auf Ihre zu erwartende Rente auswirken. Bitte beachten Sie, dass von der Rente auch Kranken- und Pflegeversicherungsbeiträge sowie gegebenenfalls Steuern zu zahlen sind. Auf der Rückseite finden Sie zudem wichtige Erläuterungen und zusätzliche Informationen.

**Rente wegen voller Erwerbsminderung**  
Wären Sie heute wegen gesundheitlicher Einschränkungen voll erwerbsgemindert, bekämen Sie von uns eine monatliche Rente von:

1.351,11 EUR
--------------

**Höhe Ihrer künftigen Regelaltersrente**  
Ihre bislang erreichte Rentenansparung entspricht nach heutigem Stand einer monatlichen Rente von:

1.399,02 EUR
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Sollten bis zur Regelaltersgrenze Beiträge wie im Durchschnitt der letzten fünf Kalenderjahre gezahlt werden, bekämen Sie ohne Berücksichtigung von Rentenanpassungen von uns eine monatliche Rente von:

1.942,76 EUR
--------------

**Rentenanpassung**  
Aufgrund zukünftiger Rentenanpassungen kann die errechnete Rente in Höhe von 1.942,76 EUR tatsächlich höher ausfallen. Allerdings können auch wir die Entwicklung nicht vorhersehen. Deshalb haben wir - ohne Berücksichtigung des Kaufkraftverlustes - zwei mögliche Varianten für Sie gerechnet. Beträgt der jährliche Anpassungssatz 1 Prozent, so ergäbe sich eine monatliche Rente von etwa 2.120 EUR. Bei einem jährlichen Anpassungssatz von 2 Prozent ergäbe sich eine monatliche Rente von etwa 2.320 EUR.

**Zusätzlicher Vorsorgebedarf**  
Da die Renten im Vergleich zu den Löhnen künftig geringer steigen werden und sich somit die spätere Lücke zwischen Rente und Erwerbseinkommen vergrößert, wird eine zusätzliche Absicherung für das Alter wichtiger ("Vorsorgelücke"). Bei der ergänzenden Altersvorsorge sollten Sie - wie bei Ihrer zu erwartenden Rente - den Kaufkraftverlust beachten.

Mit freundlichen Grüßen  
Ihre Deutsche Rentenversicherung Bund

Bitte nehmen Sie diesen Beleg zu Ihren Rentenunterlagen.

### Grundlagen der Rentenberechnung

Die Höhe Ihrer Rente richtet sich im Wesentlichen nach Ihren durch Beiträge versicherten Arbeitsverdiensten. Diese rechnen wir in **Entgeltpunkte** um. Ihrem Rentenkonto schreiben wir einen Entgeltpunkt gut, wenn Sie ein Jahr lang genau den Durchschnittsverdienst aller Versicherten (zurzeit 32.446 EUR) erzielt haben. Daneben können Ihnen aber auch Entgeltpunkte für bestimmte Zeiten gutgeschrieben werden, in denen keine Beiträge (z.B. für Fachschulausbildung) oder Beiträge vom Staat, von der Agentur für Arbeit, von der Krankenkasse oder anderen Stellen (z.B. für Wehr- oder Zivildienst, Kindererziehung, Arbeitslosigkeit und Krankheit) für Sie gezahlt wurden. Um die Höhe der Rente zu ermitteln, werden alle Entgeltpunkte zusammengezählt und mit dem so genannten aktuellen Rentenwert vervielfacht. Der aktuelle Rentenwert beträgt zurzeit 27,47 EUR in den alten und 24,37 EUR in den neuen Bundesländern. Das heißt, ein Entgeltpunkt entspricht heute beispielsweise in den alten Bundesländern einer monatlichen Rente von 27,47 EUR. Beginnt die Altersrente vor oder nach dem 01.05.2021, kann dies zu Abschlägen bzw. Zuschlägen bei der Rente führen.

**Rentenbeiträge und Entgeltpunkte**  
Bisher haben wir für Ihr Rentenkonto folgende Beiträge erhalten:

Von Ihnen	127.196,96 EUR
Von Ihrem Arbeitgeber	129.847,50 EUR
<b>haben Sie bisher insgesamt Entgeltpunkte in folgender Höhe erworben:</b>	<b>50,9041</b>

**Rente wegen voller Erwerbsminderung**  
Bei einer Rente wegen Erwerbsminderung schreiben wir Ihnen, sofern Sie das 60. Lebensjahr noch nicht vollendet haben, zusätzliche Entgeltpunkte gut, ohne dass hierfür Beiträge gezahlt worden sind. Eine Erwerbsminderungsrente wird auf Antrag grundsätzlich nur gezahlt, wenn in den letzten fünf Jahren vor Eintritt der Erwerbsminderung mindestens drei Jahre Pflichtbeitragszeiten vorliegen.

**Höhe Ihrer künftigen Regelaltersrente**  
Zur Berechnung Ihrer künftigen Rente ermitteln wir die durchschnittlichen Entgeltpunkte für die letzten fünf Kalenderjahre. Dabei können wir für das jeweils letzte Kalenderjahr vor der Renteninformation nur einen vorläufigen Durchschnittsverdienst aller Versicherten verwenden. Der endgültige Durchschnittsverdienst weicht regelmäßig von dem vorläufigen Wert ab. Daher kann sich die ermittelte Rente im Vergleich zu Ihrer vorherigen Renteninformation auch bei gleichbleibender Beitragszahlung erhöhen oder vermindern.

**Rentenanpassung**  
Die Dynamisierung (Erhöhung) der Rente erfolgt durch die Rentenanpassung. Sie richtet sich grundsätzlich nach der Lohnentwicklung, die für die Rentenanpassung - insbesondere aufgrund der demografischen Entwicklung - nur vermindert berücksichtigt wird. Die Höhe der zukünftigen Rentenanpassungen kann nicht verlässlich vorhergesehen werden. Wir haben Ihre Rente daher unter Berücksichtigung der Annahmen der Bundesregierung zur Lohnentwicklung dynamisiert. Die ermittelten Beiträge sind - wie alle weiteren späteren Einkünfte (z.B. aus einer Lebensversicherung) - wegen des Anstiegs der Lebenshaltungskosten und der damit verbundenen Geldentwertung (Inflation) in Ihrer Kaufkraft aber nicht mit einem heutigen Einkommen in dieser Höhe vergleichbar (**Kaufkraftverlust**). So werden bei einer Inflationsrate von beispielsweise 1,5 Prozent pro Jahr bei Erreichen Ihrer Regelaltersgrenze 100 EUR voraussichtlich nur noch eine Kaufkraft nach heutigen Werten von etwa 66 EUR besitzen.

**Unser Service**  
Haben Sie Fragen, benötigen Sie unseren Rat? Rufen Sie uns einfach an. Sie erreichen uns unter der kostenfreien Nummer unseres Servicetelefons 0800 100048070 von Montag bis Donnerstag von 7:30 Uhr bis 19:30 Uhr und am Freitag von 7:30 Uhr bis 15:30 Uhr. Sie können sich auch in unseren Auskunfts- und Beratungsstellen oder im Internet informieren. Wir sind auch für Sie da, wenn Sie Fragen zur staatlich geförderten zusätzlichen Altersvorsorge oder zur Grundsicherung im Alter und bei Erwerbsminderung haben.

Notes: The Figure depicts an example of an original pension-information letter (in German).

Figure 2: The treatment letter: explanations (I)

**Rente information 2012**

in dieser Renteninformation haben wir die für Sie vom 01.10.1974 bis zum 31.12.2011 gespeicherten Daten und das geltende Rentenrecht berücksichtigt. Ihre **Regelaltersrente** würde nach Erreichen der Regelaltersgrenze (04.04.2021) am **01.05.2021** beginnen. Änderungen in Ihren persönlichen Verhältnissen und gesetzliche Änderungen können sich auf Ihre zu erwartende Rente auswirken. Bitte beachten Sie, dass von der Rente auch Kranken- und Pflegeversicherungsbeiträge sowie gegebenenfalls Steuern zu zahlen sind. Auf der Rückseite finden Sie zudem wichtige Erläuterungen und zusätzliche Informationen.

**Rente wegen voller Erwerbsminderung**  
Wären Sie heute wegen gesundheitlicher Einschränkungen voll erwerbsgemindert, bekämen Sie von uns eine monatliche Rente von:

**Höhe Ihrer künftigen Regelaltersrente**  
Ihre bislang erreichte Rentenanwartschaft entspräche nach heutigem Stand einer monatlichen Rente von:  
Sollten bis zur Regelaltersgrenze Beiträge wie im Durchschnitt der letzten fünf Kalenderjahre gezahlt werden, bekämen Sie ohne Berücksichtigung von Rentenanpassungen von uns eine monatliche Rente von:

**Rentanpassung**  
Aufgrund zukünftiger Rentenanpassungen kann die errechnete Rente in Höhe von 1.942,76 EUR tatsächlich höher ausfallen. Allerdings können auch wir die Entwicklung nicht vorhersehen. Deshalb haben wir - ohne Berücksichtigung des Kaufkraftverlustes - zwei mögliche Varianten für Sie gerechnet. **Beitrag der jährliche Anpassungssatz 1 Prozent, so** ergäbe sich eine monatliche Rente von etwa 2.120 EUR. **Bei einem jährlichen Anpassungssatz von 2 Prozent ergäbe sich eine monatliche Rente von etwa 2.320 EUR.**

**Zusätzlicher Versorgungszustand**

1.351,11 EUR

1.399,02 EUR

1.942,76 EUR

Date of first social insurance contribution

Date when the statutory legal retirement age will be reached

Monthly pension in case of immediate disability

Monthly pension at statutory retirement age if no more social-insurance contributions were to be paid between now and retirement

Monthly pension at statutory retirement age if social-insurance contributions between now and retirement amounted to the avg. of contributions of the past 5 years

Pension at statutory retirement with pension adjustments of 1%.

Pension at statutory retirement with pension adjustments of 2%.

Notes: The Figure provides explanations for some of the most relevant parts of the pension-information letters.

Figure 3: The treatment letter: explanations (II)

**Grundlagen der Rentenberechnung**

Die Höhe Ihrer Rente richtet sich im Wesentlichen nach Ihren durch Beiträge versicherten Arbeitsverdiensten. Diese rechnen wir in **Entgeltpunkte** um. Ihrem Rentenkonto schreiben wir einen Entgeltpunkt gut, wenn Sie ein Jahr lang genau den Durchschnittsverdienst aller Versicherten (zurzeit 32.446 EUR) erzielt haben. Daneben können Ihnen aber auch Entgeltpunkte für bestimmte Zeiten gutgeschrieben werden, in denen keine Beiträge (z.B. für Fachschulausbildung) oder Beiträge vom Staat, von der Agentur für Arbeit, von der Krankenkasse oder anderen Stellen (z.B. für Wehr- oder Zivildienst, Kindererziehung, Arbeitslosigkeit und Krankheit) für Sie gezahlt wurden. Um die Höhe der Rente zu ermitteln, werden alle Entgeltpunkte zusammengezählt und mit dem so genannten aktuellen Rentenwert vervielfältigt. Der aktuelle Rentenwert beträgt zurzeit 27,47 EUR in den alten und 24,37 EUR in den neuen Bundesländern. Das heißt, ein Entgeltpunkt entspricht heute beispielsweise in den alten Bundesländern einer monatlichen Rente von 27,47 EUR. Beginnt die Altersrente vor oder nach dem 01.05.2021, kann dies zu Abschlägen bzw. Zuschlägen bei der Rente führen.

**Rentenbeiträge und Entgeltpunkte**  
 Bisher haben wir für Ihr Rentenkonto folgende Beiträge erhalten:  
 Von Ihnen  
 Von Ihrem/n Arbeitgeber/n  
 Aus den erhaltenen Beiträgen und Ihren sonstigen Versicherungszeiten haben Sie bisher insgesamt Entgeltpunkte in folgender Höhe erworben:

127.196,96 EUR
129.847,50 EUR
50.9041

(...)

**Renten Anpassung**

Die Dynamisierung (Erhöhung) der Rente erfolgt durch die Renten Anpassung. Sie richtet sich grundsätzlich nach der Lohnentwicklung, die für die Renten Anpassung – insbesondere aufgrund der demografischen Entwicklung - nur vermindert berücksichtigt wird. Die Höhe der zukünftigen Renten Anpassungen kann nicht verlässlich vorhergesehen werden. Wir haben Ihre Rente daher unter Berücksichtigung der Annahmen der Bundesregierung zur Lohnentwicklung dynamisiert. Die ermittelten Beträge sind - wie alle weiteren späteren Einkünfte (z.B. aus einer Lebensversicherung) - wegen des Anstiegs der Lebenshaltungskosten und der damit verbundenen Geldentwertung (Inflation) in ihrer Kaufkraft aber nicht mit einem heutigen Einkommen in dieser Höhe vergleichbar (**Kaufkraftverlust**). So werden bei einer Inflationsrate von beispielsweise 1,5 Prozent pro Jahr bei Erreichen Ihrer Regelaltersgrenze 100 EUR voraussichtlich nur noch eine Kaufkraft nach heutigen Werten von etwa 88 EUR besitzen.

Explanation: how are pensions calculated?

Hint: monthly pension is lower if retirement was to start before statutory retirement age

Accumulated contributions paid by employers and employee

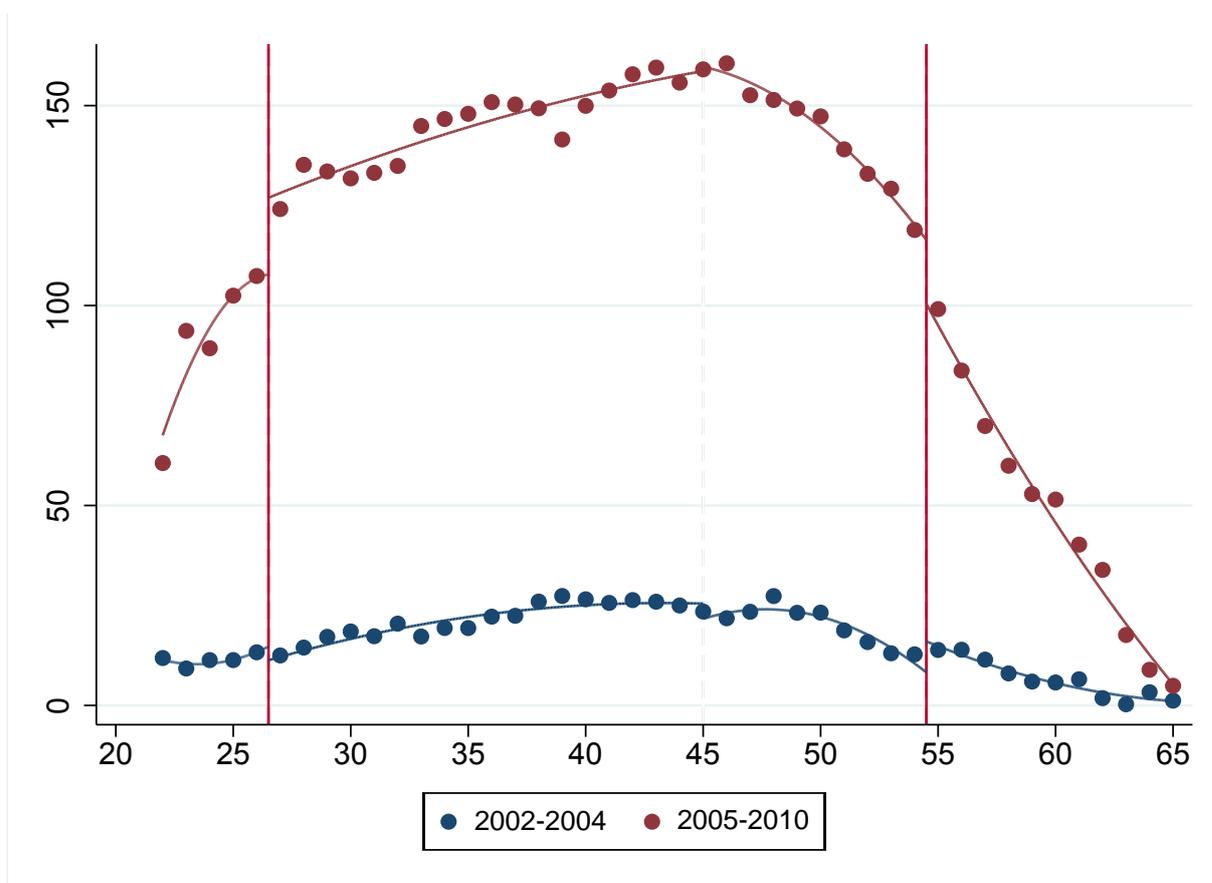
Pension points accrued so far

Pensions levels are dynamic and may be adjusted

Inflation and explanation of potential loss in purchasing power.

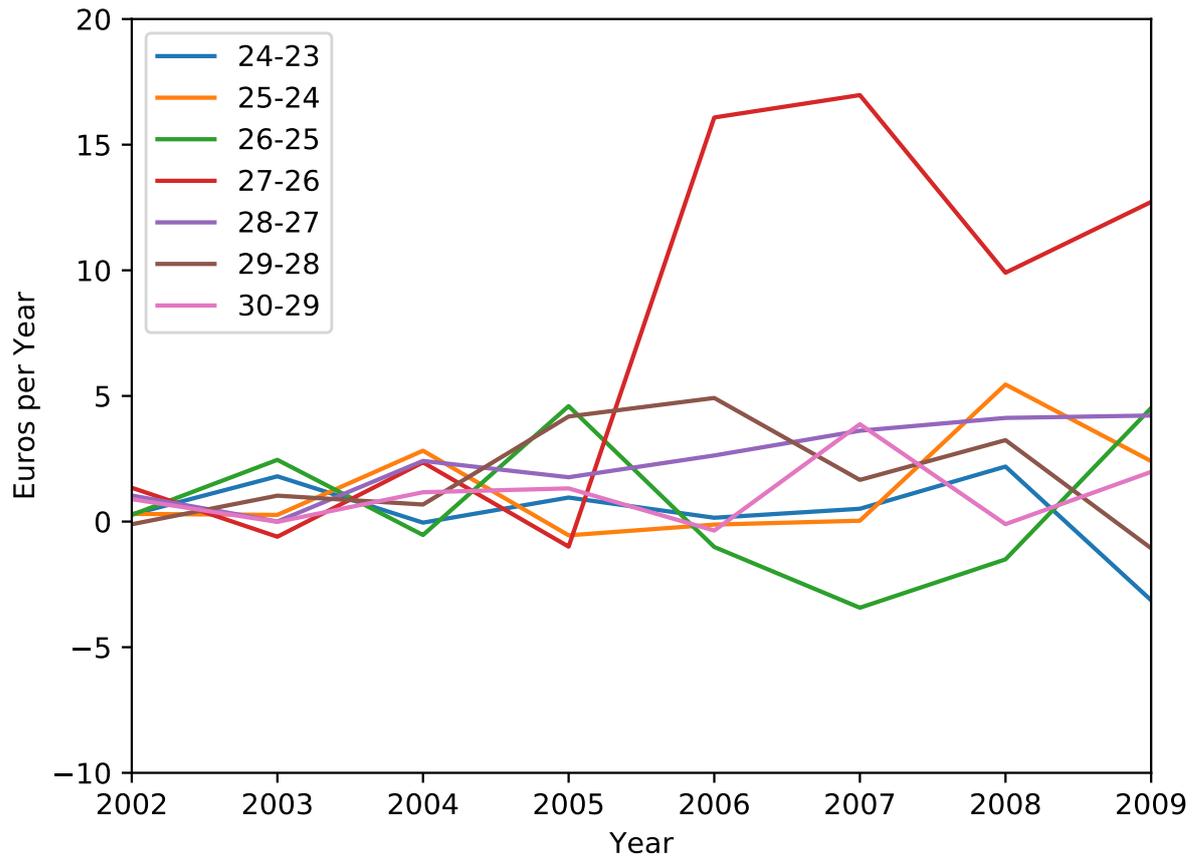
Notes: The Figure provides explanations for some of the most relevant parts of the pension-information letters.

Figure 4: Age-Savings Profile



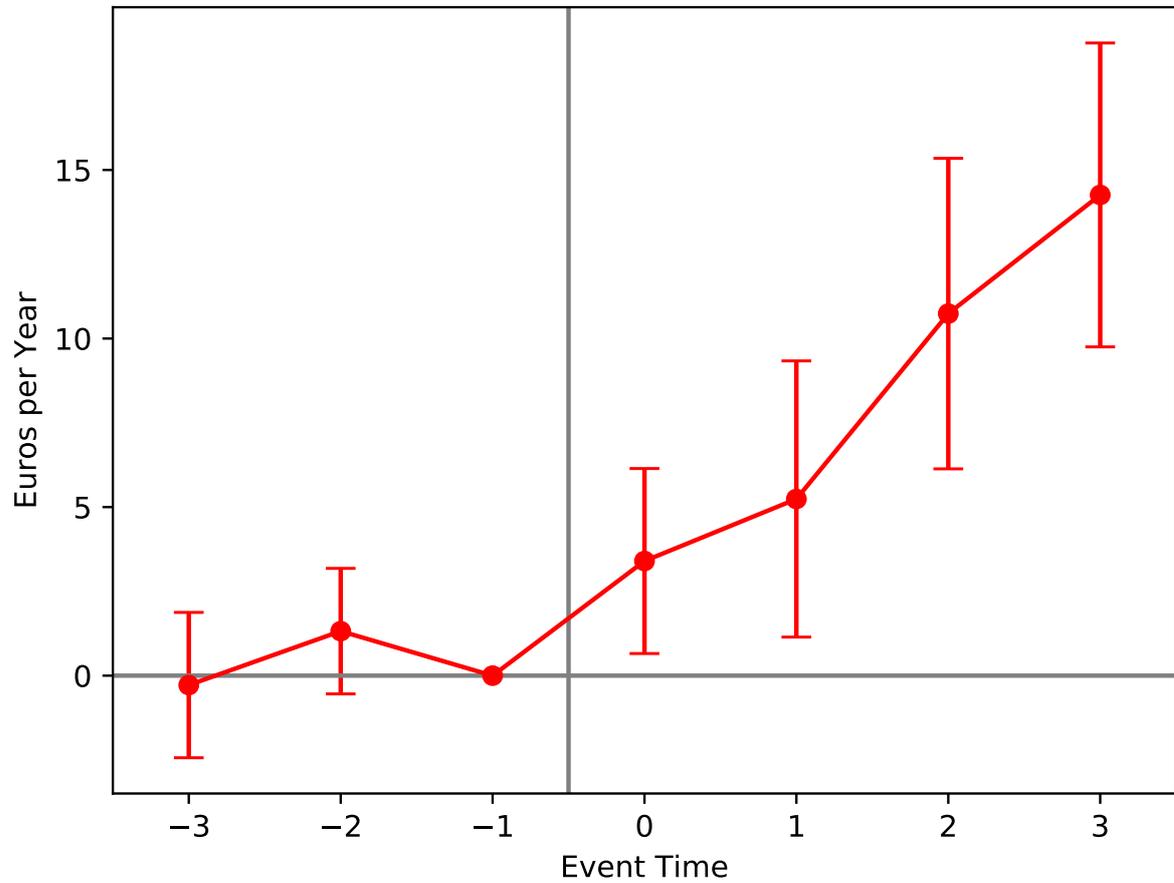
Notes: The Figure depicts average Riester savings by age for the years during and after the test phase. Contributions to Riester retirement savings account (in EUR) on y-axis. Age on x-axis. Data come from German tax returns, 2001-2010 (Taxpayer Panel, TPP).  $N = 5,743,438$ .

Figure 5: Differences between Different Age Groups Over Time



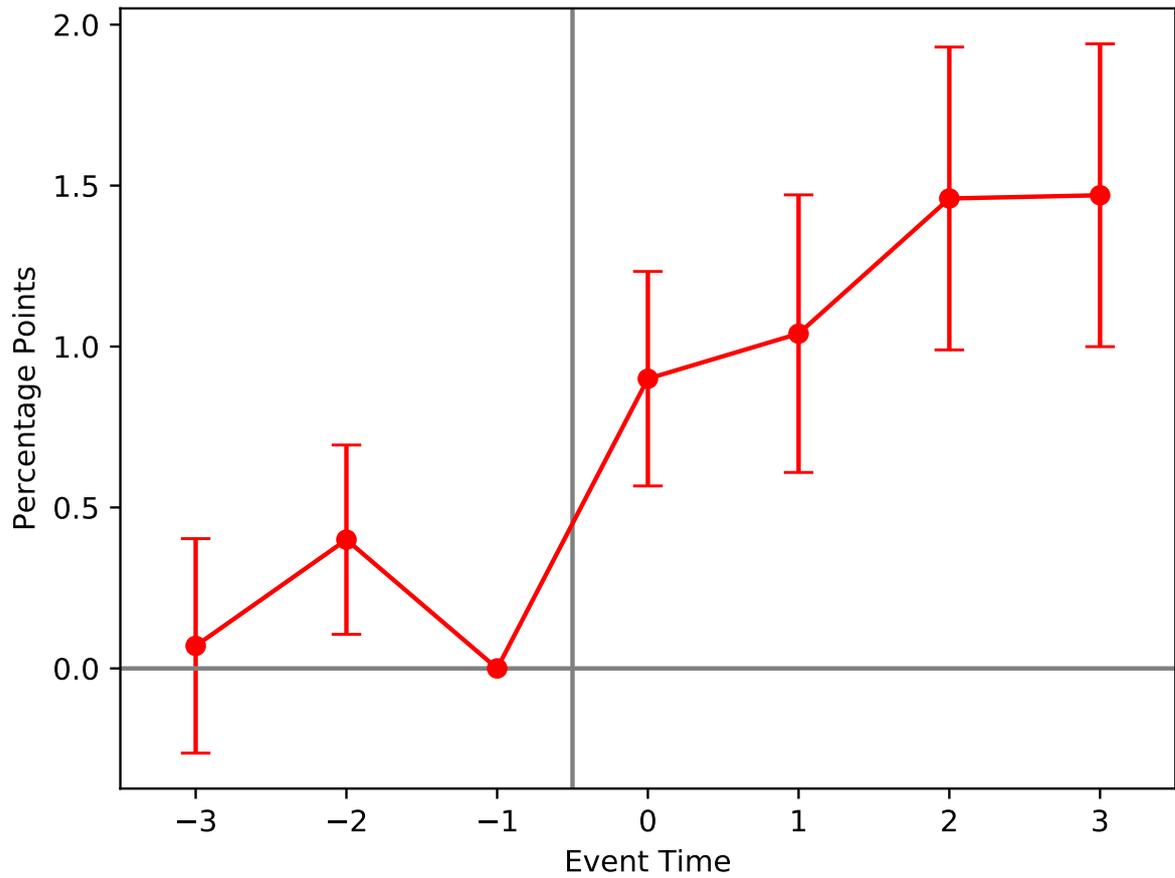
Notes: The Figure depicts differences in Riester savings between different age groups over time. The following age groups are compared: 23 vs 24, 24 vs 25, 25 vs 26, 26 vs 27, 27 vs 28, 28 vs 29 and 29 vs 30. Differences between groups in contributions to Riester retirement savings account (in EUR) on y-axis. Years on x-axis. Data come from German tax returns, 2001-2010 (Taxpayer Panel, TPP).

Figure 6: Event Study – Retirement Contributions



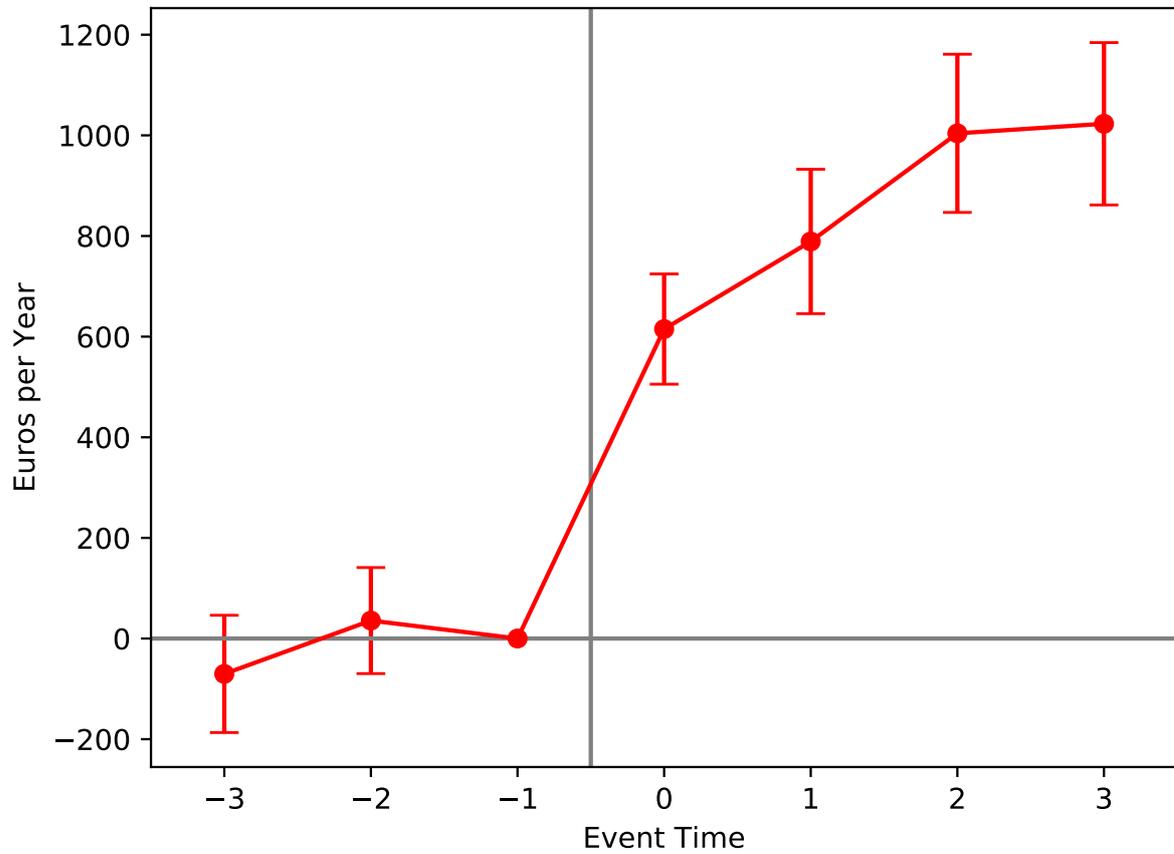
*Notes:* Event Study based on equation 1. The sample includes individuals between ages 23 and 31 years. Outcome variable: yearly contributions to a 'Riester' savings account (in EUR). The event is receiving a pension information letter for the first time. Estimates are conditional on individual and year fixed effects. Event dummies are relative to year prior to event. 95% confidence intervals displayed. Underlying standard errors are robust and clustered on the individual level. Data come from German tax returns, 2001-2010 (Taxpayer Panel, TPP).  $N = 261,848$ .

Figure 7: Event Study – Retirement Contributions, Extensive margin



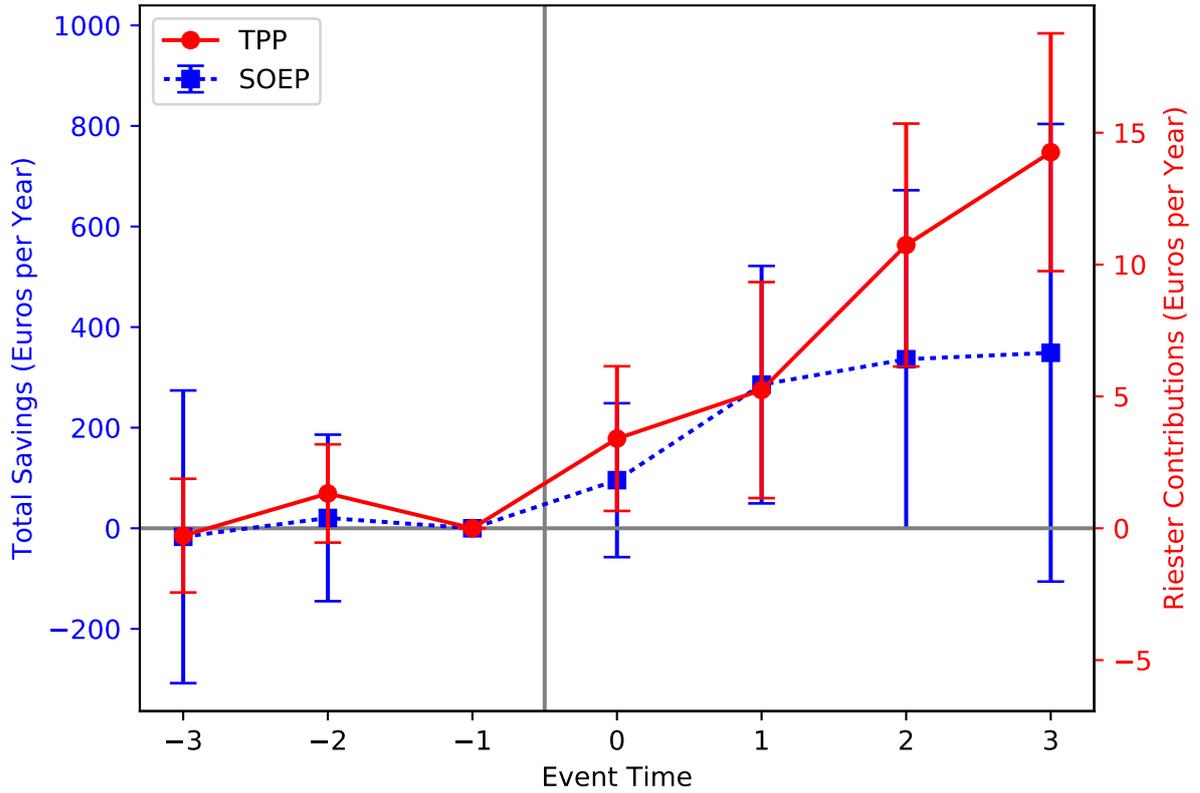
*Notes:* Event Study based on equation 1. The sample includes individuals between ages 23 and 31 years. Outcome variable: Dummy indicating positive yearly contributions to a 'Riester' savings account. The event is receiving a pension information letter for the first time. Estimates are conditional on individual and year fixed effects. Event dummies are relative to year prior to event. 95% confidence intervals displayed. Underlying standard errors are robust and clustered on the individual level. Data come from German tax returns, 2001-2010 (Taxpayer Panel, TPP).  $N = 261,848$ .

Figure 8: Event Study – Gross Earnings



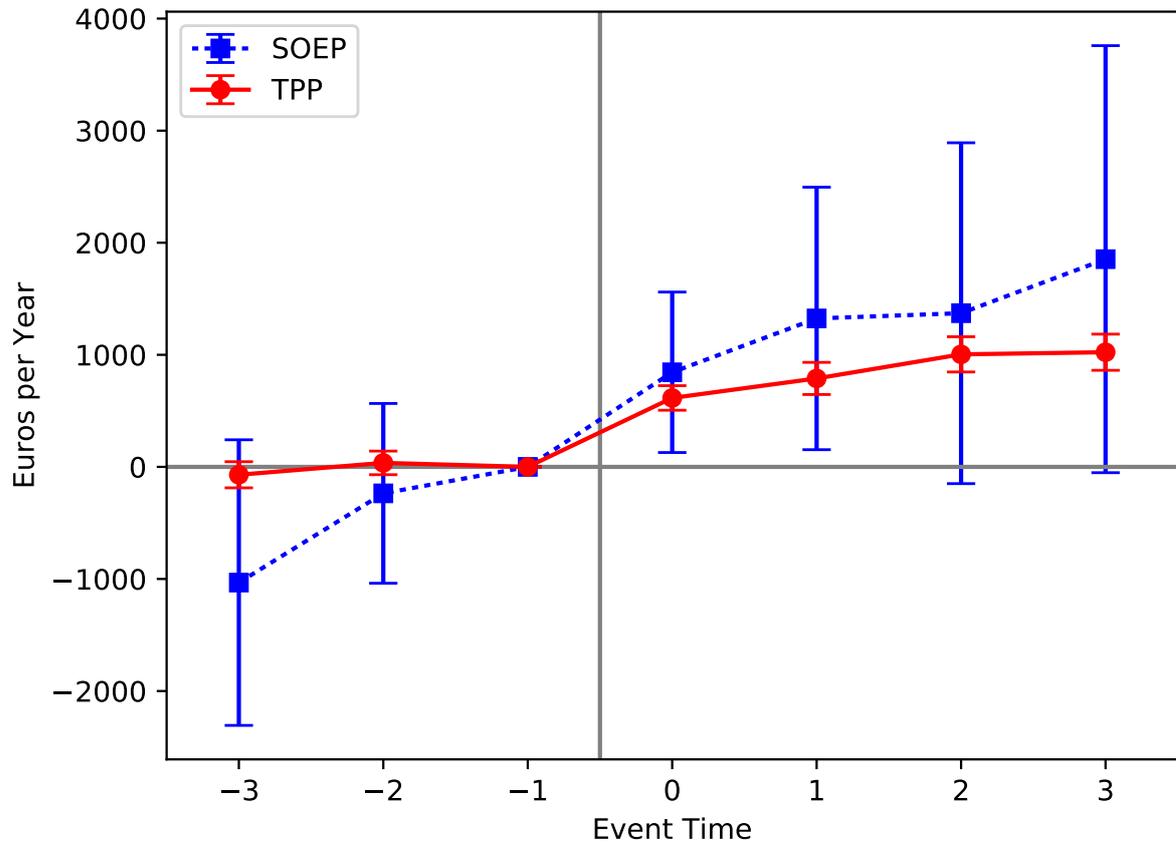
*Notes:* Event Study based on equation 1. The sample includes individuals between ages 23 and 31 years. Outcome variable: yearly gross earnings (in EUR). The event is receiving a pension information letter for the first time. Estimates are conditional on individual and year fixed effects. Event dummies are relative to year prior to event. 95% confidence intervals displayed. Underlying standard errors are robust and clustered on the individual level. Data come from German tax returns, 2001-2010 (Taxpayer Panel, TPP).  $N = 261,848$ .

Figure 9: Survey Evidence: Event Study – Total Household Savings



*Notes:* Event Study based on equation 1. Outcome variables: total household savings (left scale) and contributions by the household head to a Riester savings account (right scale). Both variables are measured in euros per year. The Riester savings variable is from the German Taxpayer Panel (TPP), the household savings variable from the Socio-Economic Panel (SOEP). The event is receiving a pension information letter for the first time. Estimates are conditional on individual and year fixed effects. Event dummies are relative to year prior to event. 95% confidence intervals displayed. Underlying standard errors are robust and clustered on the individual level.

Figure 10: Survey Evidence: Event Study – Earnings



*Notes:* Event Study based on equation 1. Outcome variable: gross earnings (in euros per year) of the household head. Data sources: German Taxpayer Panel (TPP) and Socio-Economic Panel (SOEP). The event is receiving a pension information letter for the first time. Estimates are conditional on individual and year fixed effects. Event dummies are relative to year prior to event. 95% confidence intervals displayed. Underlying standard errors are robust and clustered on the individual level.

## Tables

Table 1: Riester subsidy scheme

Year	Required contribution for maximum direct subsidy (% of gross earnings)	Basic subsidy (Euro p.a.)	Child subsidy (Euro p.a.)	Maximum special expense deduction (Euro p.a.)
2002/2003	1	38	46	525
2004/2005	2	76	92	1050
2006/2007	3	114	138	1575
since 2008	4	154	185*	2100

Notes: The table is based on Boersch-Supan et al. (2012). Riester contracts require a minimum contribution which has been 60 Euro since 2005. From 2002 to 2004, it was 45 Euro (without children), 38 Euro (one child) or 30 Euro (more than one child). \*The child subsidy is 300 Euro for children born after 2007.

Table 2: Pension expectations

Wave/Year	Share of respondents overestimating projected pension at mandatory retirement age (in %)	Share of respondents overestimating projected pension at expected retirement age (in %)
Wave 1 (2004)	61.3	71.2
Wave 2 (2006/2007)	57.9	71.1

Notes: Own calculations based on SHARE and SHARE-RV. The sample consists of non-retired survey respondents in dependent employment who answered the survey questions on the amount of their net income, their expected net replacement rate of the public pension and their expected retirement age and who agreed that their answers to the SHARE survey questions can be linked to administrative records of the German pension insurance (SHARE-RV).  $N = 111$  in wave 1 and  $N = 152$  in wave 2. The average age of respondents is 55 (age range from 42 to 64) in wave 1 and 56 (age range from 48 to 65) in wave 2.

Table 3: Summary Statistics by Year: Individuals Age 23-31 (TPP)

Year	Riester contributions			Yearly Earnings
	Mean (EUR)	Share (%)	Mean for Contribution > 0	Mean (EUR)
2002	11.82	4.75	244.15	23664.46
2003	16.03	5.47	259.00	23136.04
2004	27.19	6.45	416.98	23794.34
2005	37.45	9.15	394.37	24048.84
2006	83.63	14.73	560.93	25225.74
2007	123.77	21.02	592.35	25439.43
2008	203.00	25.24	805.90	27303.47
2009	239.83	29.46	841.48	27576.93
2010	273.90	30.62	898.77	28773.75

*Notes:* Summary statistics by year for the average amount of Riester savings (including zeros), the share (in %) of individuals with a positive Riester payment, the average Riester savings among those with a positive Riester savings amount, and mean gross earnings. The sample includes all individuals who are between 23 and 31 years old. Data come from German tax returns, 2001-2010 (Taxpayer Panel, TPP).

Table 4: Overall Household Savings by Year: Full Sample (Socio-Economic Panel)

Year	Mean (EUR)	Share (%)	Mean for Savings > 0
2002	2447.74	63.65	3845.71
2003	2395.56	62.62	3825.47
2004	2397.39	61.93	3870.95
2005	2561.99	62.45	4102.60
2006	2452.21	59.81	4100.26
2007	2486.15	61.20	4062.62
2008	2659.99	62.36	4265.63
2009	2835.31	63.41	4471.60
2010	2762.07	62.55	4415.79

*Notes:* Summary statistics by year for the average amount of savings (including zeros), the share (in %) of individuals with positive savings, and average savings among those with positive savings. Data come from the Socio-Economic Panel (SOEP). The question about savings reads: “Do you usually have an amount of money left over at the end of the month that you can save for larger purchases, emergency expenses or to acquire wealth?”

Table 5: Event Study Estimates - Riester Contributions and Gross Earnings (TPP)

	(1)	(2)	(3)	(4)	(5)
Dep. Variable	Yearly Riester contributions			Yearly Gross Earnings	
Event -3	-0.28 (1.10)	0.05 (1.10)	0.07 (0.17)	-70.31 (59.45)	-33.99 (57.79)
Event -2	1.32 (0.95)	1.78* (0.95)	0.40** (0.15)	35.71 (53.76)	98.77* (52.24)
Event +0	3.40** (1.40)	3.71*** (1.40)	0.90*** (0.17)	615.01*** (55.90)	656.08*** (54.42)
Event +1	5.24** (2.09)	5.67*** (2.10)	1.04*** (0.22)	789.12*** (73.20)	844.57*** (71.07)
Event +2	10.74*** (2.35)	11.00*** (2.35)	1.46*** (0.24)	1004.02*** (80.20)	1033.54*** (77.95)
Event +3	14.26*** (2.30)	14.58*** (2.30)	1.47*** (0.24)	1022.99*** (82.31)	1057.34*** (80.10)
Year FE	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>
Individual FE	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>
Controls	<i>no</i>	<i>yes</i>	<i>no</i>	<i>no</i>	<i>yes</i>
Adj. R2	0.120	0.120	0.098	0.101	0.133
N	261848	261744	261848	261814	261710

*Notes:* Event Study based on equation 1. The sample includes individuals between ages 23 and 31 years old. Outcome variable in (1) and (2): yearly contributions to a 'Riester' savings account (in EUR). Outcome variable in (3): Dummy indicating positive yearly contributions to a 'Riester' savings account. Outcome variable in (4) and (5): yearly gross earnings (in EUR). The event is receiving a pension information letter for the first time. Event dummies are relative to year prior to event. Estimates are conditional on individual and year fixed effects. Specifications in columns (2) and (5) additionally conditional on control variables for age, income, and dummies indicating West Germany, being married, and having children. Standard errors in parentheses are robust and clustered on the individual level. Significance levels are \* < 0.1, \*\* < 0.05, \*\*\* < 0.01. Data come from German tax returns, 2001-2010 (Taxpayer Panel, TPP).

Table 6: Event Study Estimates - Total Savings and Gross Earnings (Socio-Economic Panel)

	(1)	(2)	(4)	(5)
Dep. Variable	Yearly Total Savings		Yearly Gross Earnings	
Event -3	-16.95 (148.47)	-14.56 (148.94)	-1032.29 (650.07)	-1059.93 (648.28)
Event -2	20.52 (84.49)	22.74 (85.07)	-236.13 (409.17)	-248.79 (408.96)
Event +0	95.63 (78.07)	88.47 (79.41)	843.97** (365.23)	751.66** (358.73)
Event +1	285.55** (120.46)	268.77** (121.39)	1324.46** (597.44)	1072.00* (589.46)
Event +2	336.08* (171.47)	307.30* (173.34)	1371.24* (775.84)	908.08 (769.60)
Event +3	348.94 (232.13)	306.63 (224.07)	1853.37* (972.03)	1137.23 (978.92)
Year FE	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>
Individual FE	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>
Controls	<i>no</i>	<i>yes</i>	<i>no</i>	<i>yes</i>
R2 (within)	0.013	0.013	0.021	0.023
N	22,016	22,016	22,532	22,532

*Notes:* Event Study based on equation 1. The sample includes all individuals between ages 16 and 69. Outcome variable in (1) and (2): total household savings (in EUR per year). Outcome variable in (3) and (4): gross labor earnings (in EUR per year). The event is receiving a pension information letter for the first time. Event dummies are relative to year prior to event. Estimates are conditional on individual and year fixed effects. Specifications in columns (2) and (4) additionally include controls for age (in quintiles). Standard errors in parentheses are robust and clustered on the individual level. Significance levels are \* < 0.1, \*\* < 0.05, \*\*\* < 0.01. Data come from the Socio-Economic Panel (SOEP), 1999–2013.