Mind the gap: inheritance and inequality in retirement wealth

Lukas Brenner* Oscar Stolper†

Companion paper to main article forthcoming in Intergenerational Justice Review

Abstract—Drawing on detailed panel data, we find that gifts and inheritances substantially increase households’ private pension savings in accounts which are costly or impossible to withdraw prematurely. Back-of-the-envelope calculations suggest that (a) the average difference in bequest-induced private pension savings between heirs and non-heirs accrues to more than 40,000 EUR at retirement and that (b) it would take an average non-heir household roughly 14 years to match this gap. The sizable difference in private pension savings between heirs and non-heirs persists when we take into account other investments of heirs and non-heirs potentially intended to provide for old age. Our evidence supports the impact of gifts and inheritances on inequality in retirement wealth highlighted in recent research on intergenerational justice. We discuss several policy implications of our results.

Keywords: Household finance, retirement saving, private pension, intergenerational transfers, bequest, inheritance

JEL-Classification: D14, D15, D31

* University of Marburg, Institute of Accounting and Finance, Am Plan 1, 35032 Marburg, Germany, lukas.brenner@wiwi.uni-marburg.de
† University of Marburg, Institute of Accounting and Finance, Am Plan 1, 35032 Marburg, Germany, oscar.stolper@wiwi.uni-marburg.de, +49 (0) 6421 28 21 702

Acknowledgements—The authors would like to thank the Research Data and Services Centre of the German Central Bank (Deutsche Bundesbank) for providing us with the relevant data. This work does not necessarily reflect the views of the German Central Bank (Deutsche Bundesbank).
1. Introduction

In most developed economies, gifts and inheritances play a major role in sustaining and increasing household wealth. Early work by Kotlikoff and Summers (1981) and Kotlikoff (1988) documents that intergenerational wealth transfers account for a larger proportion of households’ overall wealth than prescribed by Modigliani’s life-cycle hypothesis. Subsequent studies for the US and Europe confirm that a considerable fraction of households’ total wealth stems from gifts and inheritances (Fessler and Schürz 2015; Gale and Scholz 1994; Kessler and Masson 1989; Wolff and Gittleman 2014). With the baby-boomer generation retiring in the near future, this intergenerational stream of capital is likely to become even more important. In Germany, for instance, a recent study by Braun (2015) estimates that as much as 2.1 trillion euro will have been transferred in the ten-year period from 2015 to 2024. This would mark a substantial increase of annual gifts and inheritances by about 20% as compared to 2001.

At the same time, sweeping pension reforms in many countries of the world have forced people to fund their own retirement through savings and investments earlier in life. Recent research in the field of intergenerational justice has thus highlighted the moral significance of inequality among retirees and, in particular, how this wealth gap is compounded by the added effect of gifts and inheritances on top of unequal earnings during working age (Halliday 2018; Wolff forthcoming). Specifically, it is argued that “[t]he economic consequences of inheritance are not a matter of how much people leave, but rather what people (expect to) receive” (Wolff forthcoming, p.9). Hence, intergenerational wealth transfers can have very important effects earlier on in life, especially when it comes to retirement planning, and, as a consequence, have the potential to reinforce the divide the economic wellbeing of retired citizens.

---

1 While we realize that a small fraction of gifts or inheritances might in fact be transferred within a given generation, we follow Brown and Weisbenner (2004) and Westerheide (2005) and use the terms ‘intergenerational wealth transfer’, ‘gift’, ‘bequest’, and ‘inheritance’ interchangeably.

2 Relatedly, Piketty (2014) estimates that annual bequest flows will amount to as much as 25% of the aggregate national income of France by 2050. Similar numbers have been found for the UK (Wolff 2015) and the US (Atkinson 2013)
This paper takes this conjecture to the data and aims at providing quantitative empirical evidence as to the impact of intergenerational wealth transfers on the financial situation of retirees. At this, we investigate the fraction of gifts and inheritances households use for the specific purpose of old-age provision. While we also include alternative options for households to save for old age, such as investments in mutual funds or housing, the focus of this study is on private pension plans designed to provide secure funds during old age. Why so? Unlike other savings and investments, these products are at least partially illiquid and incur substantial early withdrawal penalties (in addition to any applicable income taxes). Such stipulations may be regarded as self-commitment tools and we can thus be reasonably certain that private funds flowing into these illiquid accounts are indeed available for use in retirement, while this is not a foregone conclusion for savings and investments in non-commitment contracts which households may intend to consume in retirement but—frequently owing to self-control problems—liquidate early (cf., e.g., Beshears, Choi, Harris, et al. 2015; Agarwal, Pan, and Qian 2019). Thus, the quantitative effect of intergenerational transfers which we document in this study may be regarded as a lower bound of the difference in savings accumulated at retirement between heirs and non-heirs.

In order to explore the relationship between gifts or inheritances and commitment savings for old age, we draw on household panel data provided by the German Central Bank including detailed information on intergenerational wealth transfers. The panel structure of the data allows to employ a difference-in-difference approach to examine the effect of bequest flows as well as to circumvent the issue of household heterogeneity by looking at within-household effects only.

Indeed, we document that heir households appear to have a head start when it comes to old-age provision. Our first set of results suggests that, all else equal, households who receive a gift or inheritance put on average 15,268 EUR, i.e. more than four times as much money in their private pension accounts as their socio-demographic twins among the group of non-heirs. To capture the magnitude of

---

3 Note that there are significant additional ways to save for retirement age apart from private pension accounts. Clearly, these alternatives would need to be studied in detail as part of a more comprehensive analysis of the impact of intergenerational wealth transfers on old-age provision.
this effect over the household lifecycle, we perform two back-of-the-envelope calculations. On the one hand, we compute the time it takes to accumulate the gap in commitment savings for households that have subscribed to a monthly savings plan. Assuming that the average household is able to allocate half of their monthly total savings of 250 euro to private pension accounts, it would take them roughly 14 years to accumulate the respective amount of old age provision. On the other hand, we are interested in an average assessment of what difference a gift or inheritance makes by the time the heir-household retires and find that the initial gap in commitment savings accrues to more than 40,000 EUR at retirement for the average household under review. In further analyses, we show that this sizable difference in private pension savings between heirs and non-heirs persists even when we take into account other investments of heirs and non-heirs potentially intended to provide for old age. In particular, our results are not explained by non-heirs focusing on other means of asset accumulation, most prominently private housing, as a way to provide for old-age. We examine the sum of outstanding mortgages on households’ main residencies during our period under review to determine whether non-heirs pay down their mortgages rather than investing in private pension products. However, the difference in installment amounts is statistically indistinguishable from zero.

Our second set of results documents that heir households vary considerably in their use of intergenerational wealth transfers. Consistent with the literature (e.g. Wolff 2002; Elinder, Erixson, and Waldenström 2018), we document that households with above-median income and wealth put a significantly higher percentage of any gift or inheritance in their private pension accounts. Notably, this difference is not explained by lower-income heir-households receiving smaller gifts and inheritances. Nor do we observe that heir-households with lower income and wealth levels use the wealth transfers to pay down any unsecured debt prior to increasing private pension savings. Quite contrarily, we find that below-median income (below-median wealth) unsecured debt levels of heir-households slightly increase. In addition, the positive impact of receiving gifts or inheritances on private pension savings is almost exclusively driven by households in which the household member

---

4 See section 3.2 for details on these calculations.
in charge of financial decision-making belongs to an above-median age cohort. This finding cannot be explained by younger households receiving smaller gifts and inheritances, either.

Third, we shed light on whether expecting a larger gift or inheritance in the future alters peoples’ saving habits. In the vein of Börsch-Supan et al. (2016), who highlight that wrong expectations about future (public) pensions are a potential reason for under-saving for old age, we run an additional analysis, in which we focus on the potential impact of inheritances which the household under review anticipates, but has not received yet. Corroborating the earlier results, however, we find that the mere anticipation of receiving a gift or inheritance at some point in the future does not decrease the amount presently put in private pension accounts.

Fourth and finally, we find some evidence suggestive of a sustained long-term effect of intergenerational wealth transfers on individuals’ private pension savings. Studying a subsample of households that received a large gift or inheritance in the 1990s and comparing these households with matched non-heir households in 2010 and 2011, we document a significantly higher level of funds accrued in commitment savings.

2. Data and key variables

To investigate the impact of gifts and inheritances on individuals’ private pension savings, we draw on the Panel on Household Finances (PHF) survey data provided by the Deutsche Bundesbank, which is representative of the German population and provides us with detailed data on intergenerational transfers. The PHF data is elicited via personal face-to-face interviews and covers a wide range of individual and household finances. Specifically, it includes details on households’ consumption patterns, real- and financial assets, liabilities and intergenerational transfers, as well as data on individuals’ pensions and insurance contracts. Interviewed with the 3,565 households sampled in the first wave of the PHF were conducted between September 2010 and July 2011. The most recent second wave was administered

---

5 See Schmidt et al. (2017) and von Kalckreuth et al. (2017) for a technical documentation of the PHF.
between April and November 2014 and samples 4,461 households. A total of 2,138 households participated in both waves and are the subject of our study. We exclude households in which the FKP has either retired or changed between waves, which leaves us with a final sample of 1,254 households. Except for respondents’ demographic characteristics, which are available for the household’s FKP only, all variables are recorded at the household level.

The PHF asks households about the three largest gifts or inheritances they have received at the time the interview is conducted, along with asset type and amount as well as the year in which these transfers were received. Using this data, we generate our first key explanatory variable \textit{Gift/inheritance received} which assumes a value of one for the 111 sampled households that received a gift or inheritance of at least 10,000 EUR during wave 1 and wave 2 (henceforth referred to as ‘heirs’) and zero for non-heirs. Moreover, the PHF asks households to indicate if they anticipate a gift or inheritance in the future. Based on this item, we construct the second key explanatory variable \textit{Gift/inheritance anticipated} which takes a value of one for the 185 households that stated in wave 2 that they expect to receive a gift or inheritance.

Our key dependent variable, \textit{Private pension (EUR)}, is the total amount of private pension savings in a given household. At this, private pension savings include state-subsidized pension plans as well as endowment life insurances and

---

6 The respective questions in the PHF are worded as follows: “Have you or another member of your household received a larger gift or inheritance, e.g. money or other valuables, from someone who does not belong to the household?”; “How many larger gifts or inheritances were there?”; “In what year did you receive the gift/inheritance that was the most important for your current financial situation?”; “What type was the gift/inheritance?”; “What value did the gift/inheritance have when you received it?” Table A1 provides descriptions of all variables used in the analysis.

7 We exclude observations of \textit{Gift/inheritance received} whose distance from the sample mean exceeds three times the standard deviation.

8 The respective question in the PHF is worded as follows: “Does your household expect a larger gift or inheritance from someone who is not a household member in the future?”. Note: in order to make sure we capture the actual impact of expected gifts or inheritances, we further exclude households that already stated that they expect a gift or inheritance in wave 1 for the regression analyses. This reduces our initial sample from 185 households that expect a gift or an inheritance in wave 2 to 91 households that \textit{for the first time} expect a gift or an inheritance in wave 2.
all other private pension plans. Unlike other savings and investments, these products are at least partially illiquid and incur substantial early withdrawal penalties (in addition to any applicable income taxes). Such stipulations may be regarded as self-commitment tools and we can thus be reasonably certain that private funds flowing into these illiquid accounts are indeed available for use in retirement, while this is not a foregone conclusion for savings and investments in non-commitment contracts which households may intend to consume in retirement but—typically owing to self-control problems—frequently liquidate early (cf., e.g., Beshears, Choi, Harris, et al. 2015; Agarwal, Pan, and Qian 2019).

Heirs in our sample differ from non-heirs along several dimensions. To circumvent a potential selection bias confounding our analyses, we follow Andersen and Nielsen (2011) and apply a propensity score matching to identify the appropriate benchmark group of non-heir households. Specifically, we use the nearest neighbor matching procedure with one-to-one matching and assign heir-households to non-heir households with similar propensity scores (cf., e.g., Abadie and Imbens 2006). We choose the covariates proposed by Smith and Todd (2005) and take into consideration that they should simultaneously impact the outcome variable (here Private pension (EUR)) and the treatment status (here, e.g., Gift/inheritance received). In doing so, we account for the fact that households with a higher education and income are, e.g., more likely to come from a wealthier family background which in turn increases the probability of receiving significant intergenerational transfers. To provide an unbiased starting point for our matched sample, we remove households that have received a large gift or inheritance at some point before our first observation in 2010/2011. We end up with a sample of 118 households featuring data in both waves.

[Please insert Table 1about here.]

---

9 Table A2 and A3 report summary statistics of the sampled households.

10 Given the large number of non-heirs in the sample, we require the difference in propensity scores of matched twins be no larger than 0.01 (cf. Andreou, Louca, and Petrou 2017). Moreover, in the vein of Grilli and Rampichini (2011), we use wave 1 as our matching base to ensure that our covariates used for matching are either fixed (e.g. gender) or measured before the treatment.
Table 1 reports summary statistics of the matched sample of households we use in subsequent analyses. In wave 1, the average household has 2.6 members and disposposes of 3,623 EUR in net monthly income (235,512 EUR in net wealth); its FKP is 44.4 years old and holds a university degree in 42% of cases. Moreover, 73% of households own private pension products and, if so, hold on average 30,952 EUR in such contracts.

Additionally, Table 2 provides summary statistics on the intergenerational transfers under review. The average transfer amounts to 100,244 EUR, 42% (58%) of transfers are gifts (inheritances), and that the majority of assets (71%) are passed on by parents to their children.

3. Results

3.1. Univariate evidence

As an initial assessment of the impact of receiving a gift or inheritance on private pension saving, we calculate the average treatment effect (ATE). At this, we follow Abadie and Imbens (2011) and apply a nearest neighbor matching approach with bias-corrected matching estimators and cluster-robust standard errors.

Table 3 reports the corresponding results. We calculate ATEs at two points in time: at wave 1, i.e. before any gift or inheritance is received by households in the treatment group, and at wave 2 after these households have received a gift or inheritance of at least 10,000 EUR. Initially, the group of heirs holds 2,511 EUR more in their private pension savings account as compared to non-heirs and this difference turns out indistinguishable from zero ($z=0.65$). By contrast, we observe a statistically and economically significant difference in the amount of money households hold in their private pension accounts at wave 2: pension savings of heirs are 10,765 EUR larger than those of the average non-heir household ($z=2.14$). Thus, the wave 2 ATE provides preliminary evidence in support of the conjecture that households use the funds from gifts and inheritances to increase their private pension savings. In what follows, we examine if this relationship persists once we
control for a battery of additional variables previously shown to explain individuals’ likelihood of saving for old age.

3.2. Regression analysis

3.2.1. Model

We estimate a panel regression with household fixed effects and choose a ‘first difference’ approach (cf. Johnson 2005; Vaisey and Miles 2014). This method essentially carries out a conventional difference-in-differences estimation and examines if the ‘treatment’ of receiving an intergenerational transfer has a significant impact on our dependent variable $\Delta Private \ pension$. By doing so we circumvent the issue of unobserved variables causing heterogeneity, since we consider only effects captured within the respective households under review. Additionally, this approach allows us to control for time-variant variables that might affect the dependent variable. Parenthood, for instance, or a change in income or employment status at some point in between the two waves likely alter a given household’s decision to save for private pension. Thus, our generic regression model is formalized as

$$\Delta Private \ pension_i = \beta_0 + \beta_1 Gift/inheritance_i + \gamma' \Delta c_i + h_i + \epsilon_i \quad (1)$$

where the dependent variable either indicates if there is a change in the euro amount of private pension savings or whether there is a change in households’ ownership of private pension products (in the latter case estimated by means of a linear probability model).

Moreover, our key explanatory variable indicates whether or not a gift or inheritance has been received between wave 1 and wave 2 ($Gift/inheritance \ received$) in the first regression specification (cf., e.g., Weil 1994; Arrondel et al. 2014). In the second specification, we follow Andersen and Nielsen (2011) and add

---

11 Johnson (2005) and Vaisey and Miles (2014) propose two possible OLS compatible regression methodologies in a panel setting with only two waves, i.e. the ‘Lagged Dependent Variable’ (LDV) approach and the ‘First Difference’ (FD) approach. They conclude that the FD method produces less biased results and should thus be preferred over the LDV approach.
the euro value of the respective transfer (\textit{Gift/inheritance (EUR)}) as a determinant. All specifications include a vector of control variables, $c_i$, and feature household fixed effects $h_i$.

3.2.2. Main results

[Please insert Table 4 about here.]

Table 4 reports the results obtained from these regressions. In specification (1) and (2), we examine if the receipt of a transfer between wave 1 and wave 2 has an impact on the euro amount heirs invest in private pension accounts. Specification (1) shows that having received a gift or inheritance significantly increases a given heir household’s private pension account balance by as much as 18,457 EUR ($t=2.54$). This shows that heir households use a substantial part of their received intergenerational transfer to save it for old age in commitment contracts.

While the propensity score matching ensures comparability of heirs and non-heirs with respect to stationary features, we additionally control for time-variant covariates to capture the impact of potential changes in household characteristics between the survey waves.\textsuperscript{12} Bucher-Koenen and Lusardi (2011) and Börsch-Supan et al. (2012) find that disposable income is positively related to private pension saving. Similarly, household size has been shown to be positively related to saving for old age (e.g., Börsch-Supan, Reil-Held, and Schunk 2008). Further, we control for a switch of FKPs to self-employment between the two waves. Because self-employed individuals typically exit the state-granted pension system, the respective FKPs should be more likely to privately save for old age. Lastly, we include information on whether the household has received any professional financial advice in the last three years, since prior literature has shown that the use of financial

\textsuperscript{12} We do not include time fixed effects in our baseline model because we fail to reject the $H_0$ that the dummies of both waves be equal to zero. Moreover, following Brunnermeier and Nagel (2008) and Bucher-Koenen and Ziegelmeier (2014), we do not use survey weights in our main regressions. Table A4 reports results from a replication of the baseline results obtained in specification (2) and (4) which uses panel weights and time fixed effects, respectively. Results remain qualitatively unchanged. Finally, since we deal with only two waves, we neglect any potential bias of a serial correlation in this time series.
advice has a positive effect on retirement saving (e.g. Shum and Faig 2006; Von Gaudecker 2015).13

Yet, even when we include the time-variant controls, our key explanatory variable *Gift/inheritance received* remains statistically significant (*t*=2.23) and decreases only slightly in explanatory power. Specifically, specification (2) shows that households that receive a gift or inheritance during the three-year period between wave 1 and wave 2 put on average 15,268 EUR more in their private pension accounts as compared to their sociodemographic twins among the non-heirs. Given that the average non-heir household puts 3,548 EUR in their private pension accounts between wave 1 and wave 2 (private pension balance: 24,397 EUR) and wave 2 (private pension balance: 27,945 EUR), funds from a gift or inheritance, all else equal, increase private pension savings in commitment contracts by as much as 330%.

Regarding the time-variant controls, our results confirm prior evidence, i.e. show that an increase in income and household size is positively associated with an increase in the euro amount accumulated in the private pension accounts. Likewise, we find a positive relation between a switch to self-employment as well as the use of financial advice and the euro amount invested in private pensions.

In specifications (3) and (4) we follow Andersen and Nielsen (2011) and provide results using the key explanatory variable *gift/inheritance (EUR)* to analyze how much of every euro in transferred funds is invested in private pension accounts. Specification (3) reports a univariate contribution of 10 cents per euro of transfers (*t*=3.46). Even when we control for changes in household demographics during our period under review, we find that roughly 8 cents out of every euro received in the three-year period flow into the private pension saving accounts of households and confirm that this effect remains highly statistically significant (*t*=2.68).

Next, we regress the binary variable indicating a change in private pension ownership on both our key explanatory variables to see if the documented increase in private pension savings stems from more households starting to save for old age privately after having received funds (‘volume effect’) or, alternatively, if the households that already save privately simply scale up their investments (‘value

---

13 Only recently, Dolls et al. (2018) show that being provided with personalized information about expected public pension payments stimulates individuals’ private retirement savings.
effect’). We find that neither of the key explanatory variables impact the ownership probability of private pension products in any significant way. This suggests that the receipt of an intergenerational transfer does not alter the initial decision of households to start investing in private pension products. Rather, our results point to a value effect, i.e. households that are already invested in private pension products use gifts and inheritances to increase their private pension savings.

3.2.3. Asset allocation of non-heir households

Of course, non-heir households might prefer to allocate their wealth to assets other than commitment savings, i.e. private property or investments outside of private pension plans. In this section, we therefore examine the possibility that the observed difference in private pension savings of heirs versus non-heirs predominantly owes to the fact that non-heirs simply prefer alternative ways of investment. To this end, we compare the changes in securities investments (bonds, stocks, and mutual fund shares) as well as home ownership of heirs and non-heirs, respectively, between wave 1 and 2.

[Please insert Table 8 about here.]

Table 8 reports the corresponding results. As a benchmark, we set our initial dependent variable private pension (EUR) and report a statistically and economically significant difference in changes of 14,909 EUR in commitment savings between our treatment and control group. Once we turn our attention to households’ total investment funds (EUR), however, the difference between heirs and non-heirs is small and insignificant: while heirs increase their saving in investment funds by 1,250 EUR, non-heirs do so by only a slightly larger 2,366 EUR. Similarly, our analysis does not suggest that non-heirs save more in stocks or bonds as compared to heir households. This evidence leads us to rule out that the strongly positive effect of gifts and inheritances on investing in private pension commitment savings is not attenuated by non-heirs simply choosing other financial products to save for old age.

Further, we are interested in whether heir households that do not own any private pension products in wave 2 (22% of heirs), possibly use investments in capital markets to save for old age. To this end, we dissect heirs into the two subgroups of private pension holders and non-holders and compare their changes
in other investment products over time. Due to the small size of this subgroup of households, we are careful not to overstate the explanatory power of this additional analysis. We do, however, observe that heirs who have not owned any designated private pension products \textit{ex ante} increase their investments in funds and stocks by a larger magnitude than heirs who have already allocated some money to commitment saving products. In the case of allocations to investment funds, e.g., an average increase of 2,433 EUR among heir-households that previously were not invested in private pension products compares to an increase of merely 920 EUR among heir-households with existing private pension accounts. Generally, this ties in with Brunnermeier and Nagel (2008) and Andersen and Nielsen (2011) who find a positive effect of inheritances on investments in risky assets. Clearly, there is a possibility for these non-commitment investments to serve as old age provision if households manage to refrain from mid-life spending prior to retirement. Yet, the observed increase in holdings of mutual funds and stocks of heirs who do not save via private pension plans is small compared to the substantial growth of private pension holdings of heirs (14,909 EUR).

Next, we investigate whether non-heirs prefer to invest in private housing instead of using private pension products. Since 45.5\% of all transfers include real estate (cf. Table 2), the home ownership percentage among heir-households—rather unsurprisingly—increases by 25 percentage points during the period in which they receive a gift or inheritance. Also, prior research shows that gifts and inheritances help households afford housing (Spilerman and Wolff 2012; Engelhardt and Mayer 1998). By contrast, home ownership among non-heirs increases by merely 2 percentage points, i.e. providing no support for the hypothesis that our control group of non-heir households simply prefers to provide for retirement by purchasing real estate. Additionally, we examine the sum of outstanding mortgages on households’ main residences during the period under review to determine whether non-heirs pay down their mortgages rather than investing in private pension products. A total of 39 households (14 heirs and 25 non-heirs) had outstanding mortgages. However, the difference in installment amounts is statistically indistinguishable from zero. Thus, we rule out the alternative story that non-heirs focus on private housing as an alternative form of old-age provision.
Taken together, the analyses reported in this section corroborate our main result that gifts and inheritances have a sizeable positive impact on households’ commitment savings in private pension accounts.

3.2.4. Long-term effects of intergenerational transfers

The PHF data currently features two survey waves covering a period of only three years. While the short panel presents a limitation, it still allows us to make inferences about a potential long-term effect of gifts and inheritances on private pension savings: we are able to identify households that received an intergenerational transfer in the past and examine how this relates to their pension savings today. Looking at wave 1 households (surveyed in 2010/2011), we identify 228 non-retired households that received a gift or inheritance worth more than 10,000 EUR between 1990 and 2000 such that the intergenerational transfer was received at least ten years prior to the interview date. We denote the respective subsample of households as old heirs. Next, we apply a propensity score matching using nearest neighbors (caliper of 0.01, no replacements) to construct a matched control group of non-heirs obtained from the remainder of wave 1 households.

As can be inferred from Table 9, our treatment group of old heirs and our matched control group do not differ with respect to the listed characteristics (e.g. net income, household size, gender or age). Since the matching approach ensures full comparability regarding identical household attributes, the distinguishing characteristic is that the group of old heirs received a large gift or inheritance at some point in the 1990s.

Three results are worth highlighting. First, the average intergenerational transfer sum of our treatment group is similar in size (96,815 EUR) compared to our main sample. Moreover, corroborating prior research (e.g., Joulfaian 2006; Westerheide 2005), household net wealth is still increased by more than the transfer amount ten years after the receipt. Second, as shown in the main results, private pension ownership appears to remain unaffected by a large gift or inheritance in the past. Third, the only statistically different covariate is private pension (EUR). At 16,425 EUR, the treatment group of old heirs owns significantly more in private pension saving accounts in 2010/2011 when compared to the matched
group of non-heirs. Hence, this supplementary analysis suggests that intergenerational transfers feature a long-term effect for private pension saving in commitment accounts.14

3.2.5. Anticipation of future gifts or inheritances

Prior research suggests that children who expect to inherit from their parents tend to build their lives in part around that expectation. Weil (1994), e.g., finds that households that expect an inheritance increase their consumption even prior to actually receiving it by 5%. By the same token, households expecting future transfers might be less disciplined in putting aside money for their retirement. In what follows, we therefore investigate the potential impact of inheritances which the household under review anticipates, but, unlike in the previous case, has not received yet.

We address this question by leveraging the panel structure of our data and look at the subsample of households that switch from ‘not anticipating a gift or inheritance’ in wave 1 to ‘anticipating a gift or inheritance’ in wave 2.15

[Please insert Table 6 about here.]

Table 6 reports the corresponding results. Univariately, we find a significant positive effect of the model’s key explanatory dummy variable Gift inheritance anticipated ($\beta_1=12,343$ EUR; $t=2.74$), i.e. suggesting that households allocate more—rather than less—money to their private pension accounts once they anticipate a gift or inheritance. Specification (2) controls for several additional determinants of households’ propensity to save for old age once they expect a gift or inheritance,

14 Despite a slightly smaller euro amount of gifts and inheritances in the period 1990-2000, we find that old heirs’ extra pension saving amount of 16,425 EUR in 2010/2011 already increased compared to our baseline amount of 15,268 EUR reported in the main results. Besides, the average age of old heirs, reported in Table 9, is 51 years in 2010/2011, which leaves several years to further accumulate pension savings.

15 We exclude households that already expect a gift or inheritance in wave 1, because (i) we do not know since when exactly they have been anticipating the money and (ii) we want to examine a quasi-treatment effect for those households making an active switch from not expecting in wave 1 to expecting in wave 2 (assumption: some event triggered households to start expecting a future gift or inheritance). We base our nearest neighbor propensity score matching on households that fulfill these criteria. Thus, the matched sample contains households that anticipate a transfer, as well as sociodemographic twins who populate the control group.
such as, e.g., whether they have received such transfers in the period under review or whether they have received financial advice. As a consequence, the explanatory power of Gift/inheritance anticipated decreases considerably and the coefficient turns insignificant ($\beta_1 = 4,178$ EUR; $t=0.64$). Thus, we conclude that anticipating to receive a gift or inheritance in the future does not materially influence the amount a household allocates to private pension accounts.

Moreover, unlike in our baseline panel regression, where we examine the impact of a gift or inheritance received by the household under review at some point between the first and the second wave of the PHF survey—and for which we can consequently assume causality with reasonable confidence—the mere anticipation of a future transfer is likely impacted by unobservable factors. Specifically, it is possible that an omitted variable exists that influences both the expectation to receive a future gift or inheritance and the amount invested in private pension. Braun (2015), e.g., finds that households with more financial assets (i.a. private pension products) are more likely to receive gifts or inheritances in the future, while a positive impact of household wealth on private pension savings is also confirmed in the literature (e.g., Börsch-Supan et al., 2012; Bucher-Koenen and Lusardi, 2011). Thus, wealth in the household’s family, e.g., likely affects both the expectation to receive a future transfer and the amount invested in private pension, presenting us with an endogeneity issue which could bias our OLS regression results.

Following Bucher-Koenen and Lusardi (2011), we apply an instrumental variables (IV) approach for which we make use of our households’ place of residence. When constructing our first IV, we exploit the peculiarity that Germany was separated in a capitalistic and a socialistic part until October 1990. Owing to the different economic systems, families of individuals in West Germany are more likely to have aggregated wealth as compared to families of individuals who lived in East Germany. Thus, consistent with evidence presented in Braun (2015), we assume that individuals residing in West Germany are more likely to receive a substantial gift or inheritance and therefore anticipate receiving such a transfer more often. Further, we argue that the accumulation of private pension savings is

---

16 Figure A1 visualizes our instrumentation framework.
uncorrelated to whether or not a given household had its residence in East or West Germany. First, the first PHF survey wave was elicited more than 20 years after the reunification of Germany, i.e. providing households from both parts of the country with a reasonably long period of time to accumulate assets in their private pension accounts. Second, important pension reforms in Germany that stipulated private pension savings were introduced in 2001 (Börsch-Supan, Reil-Held, and Coppola 2012), i.e. roughly 10 years apart from both the country’s reunification and the first PHF wave.

Table 7 reports results obtained from a two-stages least square panel regression model. *Gift/inheritance anticipated* is instrumented by the indicator variable *Household’s resided in West Germany in 1989*. The bottom part of the table reports results of the endogeneity test for the main regressor. From the endogeneity test ($\chi^2 p > 0.10$ for all specifications), we conclude that our independent variable is exogenous and that the IV regression model is feasible. *F*-test results ($F=160, p=0.000$) for our first-stage regression confirm that our selected instrument is correlated with *Gift/inheritance anticipated* and therefore relevant. In addition, we run a Kleibergen-Paap test for underidentification and the results show that our model is identified and that our instrument is correlated with the regressor ($\chi^2 p = 0.000$). Supporting the results of the corresponding non-IV regression reported in Table 6, the main coefficient is positive and significant ($\beta_1=20,628$ EUR; $t=2.59$) in the univariate specification. However, once we add the controls as in our non-IV regression, our variable of interest *Gift/inheritance anticipated* (IV) again turns insignificant ($\beta_1=8,715$ EUR; $t=1.00$). Finally, results of the covariates’ coefficients are all in line with the non-IV regression.

In a second step, to further improve the prediction of *Gift/inheritance anticipated* in the first-stage regression, we add a second instrumental variable so as to jointly instrument our key explanatory variable. As depicted in the instrumentation framework in Figure A1, we incorporate the additional dummy variable

---

17 Based on the question “Where did you have your residence when the Berlin Wall fell?” in the PHF. In our matched sample (N=182), 79% of FKPs stated West Germany, 14% East Germany and 7% elsewhere (i.e. abroad). Dummy variable used as instrument equals one if FKP stated “West Germany”.
Household never received any gift or inheritance before wave 1 of PHF, which assumes a value of one if the household is a non-heir in wave 1. Our rationale behind this second instrument is that households with no prior receipt of a gift or inheritance are more likely to receive (and thus anticipate) a transfer in the future. The results in specification (3) and (4) closely match those of specification (1) and (2). In specification (4), when including all relevant controls, the coefficient of our key explanatory variable Gift/inheritance anticipated (IV) is again positive and statistically insignificant. Moreover, the first-stage quality indicators report relevant and identified instruments. Based on Hansen’s J-statistic, we can conclude that the instruments are valid and correctly identified. Again, we corroborate our non-IV results, stating that the mere anticipation of receiving a gift or inheritance at some point in the future does not decrease the amount presently put in private pensions accounts. If anything, results point towards an increase in private old age provision.

3.2.6. Further analyses

Prior literature on private pension saving behavior finds substantial differences depending on household characteristics such as prior education (Börsch-Supan, Reil-Held, and Schunk 2008), age (Börsch-Supan, Reil-Held, and Coppola 2012), or income (Bucher-Koenen and Lusardi 2011). Likewise, Wolff (2002) points out that poorer households rather spend more out of their received inheritances, whereas the rich are likely to save them. Moreover, Elinder, Erixson, and Waldenström (2018) recently confirm that less wealthy individuals consume a larger share of their inheritance and that especially richer heirs have a tendency to save more from their received transfer. Braun (2015) adds to this discussion, stating that those who will inherit are primarily the ones that already own higher-than-average wealth. Thus, we investigate if and how the effect of intergenerational transfers on the amount of private pension savings varies across subgroups of households in ways previously unaccounted for by the baseline model specified in equation (1). Since it is not possible to include (quasi-)time-invariant variables

18 Unfortunately, we lack data on whether parents of household’s FKP (plus spouse) are still alive. We therefore use the proxy “never received any gift before” to approximate “parents are still alive” and combine this in the regression with the first instrument “being from West Germany” (indicating higher wealth level of wider family).
in the fixed effects model, we follow Johnson (2005) and let them enter the regression via interactions with the time-varying variables. Formally, we account for potential heterogeneous effects by estimating

\[
\Delta \text{Private pension (EUR)}_i = \beta_0 + \beta_1 \text{Gift/inheritance}_i + \beta_2 \text{Gift/inheritance}_i \times [\text{Indicator variable}_i] + \gamma' \Delta c_i + h_i + \varepsilon_i
\]

(2)

where our set of household characteristics enter the equation one by one as indicator variables. At this, we dichotomize all metric variables via median splits and the variable suffix _high denotes above-median values of observations for these variables. Again, we use wave 1 values to set the indicator variables to ensure they are not affected by receiving a gift or inheritance.

[Please insert Table 5 about here.]

Table 5 reports results obtained from our analysis of heterogeneous treatment effects. Panel A (Panel B) is organized by characteristics of heir-households (gift/inheritance types). Consistent with our baseline regressions, the LHS (RHS) of the table reports results with Gift/inheritance received (Gift/inheritance (EUR)) as the key explanatory variable.

For the first indicator variable, \( \beta_1 (\beta_1 + \beta_2) \) reports the effect of receiving a gift or inheritance given the household is below (above) the median net income, while \( \beta_2 \) shows the difference in the reported effects for low and high net income households, respectively. At 22,647 EUR (11 cents per EUR in funds received), \( \beta_2 \) is large and statistically significant, and we conclude that households with an above median net income invest significantly more in their private pension accounts if receiving a gift or inheritance. Notably, this difference is not explained by lower-income heir-households receiving smaller gifts and inheritances.\(^{19}\) For the second indicator variable, Household net wealth_high, we find a similar pattern, indicating that wealthier households in particular use the transfer receipts to scale up private pension savings. Again, we test an alternative explanation of this result, i.e. that heir-households with lower income and wealth levels use the received

\(^{19}\) Conversely, heirs with below-median household income receive gifts and inheritances of an average 109,000 EUR, while higher income households receive average transfers of 95,000 EUR.
funds to pay down any unsecured debt prior to increasing private pension savings. However, the results from this supplementary analysis suggest otherwise and corroborate our main finding. Moreover, households in which the FKP is aged above the median of 45 years put a significantly higher fraction of gifts or inheritances into their private pension accounts ($\beta_2 = 26,558$ EUR or 14 cents per EUR in funds received). By contrast, the impact is close to zero for younger heirs. This suggests that the effect of receiving gifts or inheritances on private pension saving is almost exclusively driven by households with FKPs aged 45-65 years. Again, the difference cannot be explained by younger households receiving smaller gifts and inheritances. For the remainder of subgroups in panel A, we observe no significant differences in the impact of receiving transfer funds on their private pension savings.

Panel B of Table 5 reports additional heterogeneous treatment effects based on the nature of the gift or inheritance received. Specifically, we observe a difference in the impact of transfers which include a real estate component compared to the remainder of gifts and inheritances ($\beta_2 = 26,347$ EUR or 6 cents per EUR in funds received). Our results are consistent with Westerheide (2005), who finds that real estate transfers lead to higher savings.

Second, we test whether the impact of receiving transfers on private pension saving is different if the receipt was anticipated by the heir household. Corresponding evidence from prior research is mixed. Brown and Weisbenner (2004) find that the mere expectation of receiving a gift or inheritance does not alter the households’ decision to save more or less. Likewise, Wolff (2015) states that expectation regarding future inheritance do quantitatively not play a role in affecting the saving behavior. Elinder, Erixson, and Waldenström (2018) use the Swedish population register to examine if expected inheritances affect individuals’ wealth and

---

20 Specifically, we examine heirs’ unsecured debt, e.g. unpaid credit card bills, overdrafts and consumer loans, which average approximately 4,000 EUR across households under review. Counterintuitively, we find that below-median income (below-median wealth) unsecured debt levels of heir-households even increase by 456 EUR (806 EUR).

21 Note that, while $\beta_2$ turns out statistically insignificant, we show that married households partially drive the effect of gift and inheritance on pension savings. This ties in with related research which documents that higher average wealth levels of married couples partly stem from larger private pension claims (e.g., Zissimopoulos, Karney, and Rauer 2013).
saving behavior. Pairing decedents and heirs, they examine if an increase in decedents wealth leads to dissaving for heirs, but find no evidence of an impact. In a related study addressing the impact of inheritance receipts on individuals’ probability of early retirement, Brown, Coile, and Weisbenner (2010), e.g., find that the likelihood of retiring early after an unexpected inheritance is twice as high as compared to an inheritance which has been anticipated. By contrast, Doorley and Pestel (2016) find no difference between expected and unexpected inheritances with respect to the households’ decision to retire earlier. We include the binary variable Gift/inheritance anticipated, indicating if the FKP stated in wave 1 that the household expects to receive a gift or inheritance, and our results show no significant difference between the two groups of inheritances, either.

4. Discussion and concluding remarks

Using detailed household panel data, we investigate how gifts and inheritances affect the financial decision making of households with respect to private pension savings. At this, we focus on private pension plans designed to be provide secure funds during old age. Our main result is that, on the one hand, intergenerational wealth transfers do seem to provide the average heir household under review with a head start when it comes to old-age provision. All else equal, households who receive a gift or inheritance during the three-year sample period between 2011 and 2014 make on average 15,268 EUR (or as much as 330%) higher payments to their private pension accounts as compared to their sociodemographic twins among the group of non-heirs. This gap accrues to more than 40,000 EUR at retirement and persists even when we control for other investments of heirs and non-heirs which may be intended to provide for old age, such as securities holdings or real estate (including mortgage down payments of existing housing).

On the other hand, we document considerable variation in the effect size of transferred funds with respect to heir-households’ commitment savings for old age. First, heir-households with above-median income and wealth put a significantly higher percentage of a given gift or inheritance in their private pension accounts. Notably, this difference is not explained by lower-income heir-households receiving smaller gifts and inheritances—in fact, average transferred funds among households with below-median income are roughly 15% larger than those for higher
income heirs. In addition, we rule out other alternative explanations, such as the possibility that some heir-households wish to pay off their unsecured debt prior to saving by means of a private pension plan. Third, the positive impact of receiving gifts or inheritances on private pension savings is almost exclusively driven by households with financial decision makers aged 45-65 years. Again, this finding cannot be explained by younger households receiving smaller gifts and inheritances.

Our findings contribute to recent research illuminating the role of intergenerational wealth transfers for intergenerational justice. Halliday (2018) argues that inherited wealth undermines social justice when it helps maintain group-based wealth inequalities over time. Indeed, intergenerational wealth transfers can be a mechanism by which economic segregation is created and transmitted over the generations. Wolff (forthcoming) worries that the retirement divide is one of the most notable examples of economic segregation in the UK. Corroborating this concern, prior empirical research documents that large proportions of gifts and inheritances are not consumed by the recipients. Westerheide (2005) finds that about 80% of an intergenerational wealth transfer is saved by the average heir and that gifts and inheritances considerably affect the wealth creation of households. Joulfaian (2006) confirms those figures using US estate tax records and finds that 79% of inheritances are saved and retained as wealth. Moreover, Braun (2015) documents that those who will inherit are primarily the ones that already own higher-than-average wealth.

Halliday (2018) highlights that the cumulative effects of intergenerational wealth transfers, unless they are carefully regulated, threaten to erode the background conditions to social cooperation (‘background justice’) over time and discusses various different ideas on how to regulate large flows of bequest by means of taxation. In a related contribution, Pedersen (2018) provides a survey of key topics on just inheritance taxation. Wolff (forthcoming) proposes that “[u]sing the funds generated by these taxes to increase the state pension would mitigate the inequality in retirement to some degree” (p.11). Yet, he concedes that, although taxing inheritances might be just, it would most probably lack general public support.
Generally, there is a wide consensus among economists and social scientists that the intergenerational replication of inequality is real and that it might have previously been underestimated (e.g. Mazumder 2005). The mechanisms by which status and economic inequality reproduce over the generations, however, are less well understood. For example, it has recently been argued that the bigger cause of massive inequality today is very high earnings rather than inheritance (e.g. Piketty 2014). By providing a quantitative account of how gifts and inheritances affect inequality in retirement wealth, this study hopes to promote discussions on intergenerational justice in society and to provide new perspectives for policymakers.
References

Abadie, A., and G. W. Imbens. 2006. Large Sample Properties of Matching Estimators. *Econometrica* 74:235–67.

Abadie, A., and G. W. Imbens. 2011. Bias-Corrected Matching Estimators for Average Treatment Effects. *Journal of Business and Economic Statistics* 29:1–11.

Agarwal, S., J. Pan, and W. Qian. 2019. Age of Decision: Pension Savings Withdrawal and Consumption and Debt Response. *Management Science*.

Andersen, S., and K. M. Nielsen. 2011. Participation Constraints in the Stock Market: Evidence from Unexpected Inheritance Due to Sudden Death. *Review of Financial Studies* 24:1667–97.

Andreou, P. C., C. Louca, and A. P. Petrou. 2019. CEO Age and Stock Price Crash Risk. *Review of Finance* 21:1287–1325.

Arrondel, L., L. Bartiloro, P. Fessler, P. Lindner, T. Y. Mathä, C. Rampazzi, F. Savignac, T. Schmidt, M. Schürz, and P. Vermeulen. 2014. How Do Households Allocate Their Assets? Stylized Facts from the Eurosystem Household Finance and Consumption Survey. *International Journal of Central Banking* 12:129–220.

Beshears, J., J. Choi, C. Harris, D. Laibson, B. Madrian, and J. Sakong. 2015. Self Control and Commitment: Can Decreasing the Liquidity of Savings Account Increase Deposits. NBER Working Paper Series.

Beshears, J., J. Choi, J. Hurwitz, D. Laibson, and B. Madrian. 2015. Liquidity in Retirement Savings Systems: An International Comparison. *American Economic Review* 105:420–25.

Beshears, J., J. Choi, D. Laibson, and B. Madrian. 2008. A Primer on 401 (k) Loans. NBER Working Paper Series.

Börsch-Supan, A., T. Bucher-Koenen, I. Ferrari, V. Kutlu-Koc, and J. Rausch. 2016. The Development of the Pension Gap and German Households’ Saving Behavior. MEA Discussion Papers.

Börsch-Supan, A., A. Reil-Held, and M. Coppola. 2012. Riester Pensions in Germany-Design, Dynamics, Targeting Success, and Crowding-In. *Matching Contributions for Pensions: A Review of International Experience*. The World Bank.

Börsch-Supan, A., A. Reil-Held, and D. Schunk. 2008. Saving Incentives, Old-Age Provision and Displacement Effects: Evidence from the Recent German Pension Reform. *Journal of Pension Economics and Finance* 7:295–319.

Braun, R. 2015. Erben in Deutschland: Volumen, Verteilung Und Verwendung. *Deutsches Institut für Altersvorsorge*.

Brown, J. R., C. C. Coile, and S. Weisbenner. 2010. The Effect of Inheritance Receipt on Retirement. *Review of Economics and Statistics* 92:425–34.

Brown, J. R., and S. Weisbenner. 2004. Intergenerational Transfers and Savings Behavior. In
Wise, D. A. (ed.), *Perspectives on the Economics of Aging*. Chigaco: University of Chicago Press.

Brunnermeier, M., and S. Nagel. 2008. Do Wealth Fluctuations Generate Time-Varying Risk Aversion? Micro-Evidence on Individuals. *American Economic Review* 2008 98:713–36.

Bucher-Koenen, T., and A. Lusardi. 2011. Financial Literacy and Retirement Planning in Germany. *Journal of Pension Economics and Finance* 10:565–84.

Bucher-Koenen, T., and M. Ziegelmeyer. 2014. Once Burned, Twice Shy? Financial Literacy and Wealth Losses during the Financial Crisis. *Review of Finance* 18:2215–46.

Destatis. 2018. Sparquote Der Privaten Haushalte in Deutschland von 1991 Bis 2017.

Dolls, M., P. Doerrenberg, A. Peichl, and H. Stichnoth. 2018. Do Retirement Savings Increase in Response to Information About Retirement and Expected Pensions? *Journal of Public Economics* 158:168–79.

Doorley, K., and N. Pestel. 2016. Labour Supply after Inheritances and the Role of Expectations. *IZA Discussion Paper Series*.

DPAA. 2014. Mehr Geld in Riester-Vertrag Einzahlen Kann Steuern Sparen. *Süddeutsche Zeitung*.

Elinder, M., O. Erixson, and D. Waldenström. 2018. Inheritance and Wealth Inequality: Evidence from Population Registers. *Journal of Public Economics* 165:17–30.

Engelhardt, G. V., and C. J. Mayer. 1998. Intergenerational Transfers, Borrowing Constraints, and Saving Behavior: Evidence from the Housing Market. *Journal of Urban Economics* 44:135–57.

European Commission. 2018. The 2018 Ageing Report: Economic and Budgetary Projections for the EU Member States (2016-2070).

Fessler, P., and M. Schürz. 2015. Private Wealth across European Countries: The Role of Income, Inheritance and the Welfare State. *ECB Working Paper Series* 1847.

Fleming, M., W. Bassett, and A. Rodrigues. 1998. How Workers Use 401(k) Plans: The Participation, Contribution, and Withdrawal Decisions. *National Tax Journal* 401.

Gale, W. G., and J. K. Scholz. 1994. Intergenerational Transfers and the Accumulation of Wealth. *Journal of Economic Perspectives* 8:145–60.

Gaudecker, H. M. Von. 2015. How Does Household Portfolio Diversification Vary with Financial Literacy and Financial Advice? *Journal of Finance* 70:489–507.

Grilli, L., and C. Rampichini. 2011. Propensity Scores for the Estimation of Average Treatment Effects in Observational Studies. *Training Sessions on Causal Inference (Contribution by University of Florence)*.

Halliday, D. 2018. *The Inheritance of Wealth – Justice, Equality and the Right to Bequeath*. Oxford University Press.

IfDAllensbach. 2015. Erben Und Vererben.

Johnson, D. 2005. Two-Wave Panel Analysis: Comparing Statistical Methods for Studying the Effects of Transitions. *Journal of Marriage and Family* 67:1061–75.

Joulfaian, D. 2006. Inheritance and Saving. *NBER Working Paper*.
Kalckreuth, U. Von, T. Schmidt, M. Eisele, J. Le Blanc, and J. Zhu. 2017. Panel on Household Finances 1. Welle [Data Set]. Deutsche Bundesbank.

Kessler, D., and A. Masson. 1989. Bequest and Wealth Accumulation: Are Some Pieces of the Puzzle Missing? The Journal of Economic Perspectives 3:141–52.

Kotlikoff, L. J. 1988. Intergenerational Transfers and Savings. Journal of Economic Perspectives 2:41–58.

Kotlikoff, L. J., and L. H. Summers. 1981. The Role of Intergenerational Transfers in Aggregate Capital Accumulation. Journal of Political Economy 89:706–32.

Mazumder, 2005. Fortunate Sons: New Estimates of Intergenerational Mobility in the United States Using Social Security Earnings Data. Review of Economics and Statistics 87:235-255.

Pedersen, J. 2018. Just Inheritance Taxation. Philosophy Compass 13:1-10.

Piketty, T. 2014. Capital in the Twenty-First Century. Cambridge, MA: Harvard University Press.

Rooij, M. van, A. Lusardi, and R. Alessie. 2012. Financial Literacy, Retirement Planning, and Household Wealth. The Economic Journal 122:449–78.

Schmergal, C. 2019. Sparer Legen Jeden Fünften Riser-Vertrag Auf Eis. Spiegel .

Schmidt, T., J. Zhu, J. Le Blanc, P. Tzamourani, K. Altmann, E. Gabor, D. Werner, and L. Pham-Dao. 2017. Panel on Household Finances 2nd Wave [Data Set]. Deutsche Bundesbank.

Seibel, K. 2017. Wie Einfach Riester-Sparer Den Höchstsatz Kassieren. Welt .

Shum, P., and M. Faig. 2006. What Explains Household Stock Holdings? Journal of Banking and Finance 30:2579–97.

Smith, J., and P. Todd. 2005. Does Matching Overcome Lalonde’s Critique of Nonexperimental Estimators. Journal of Econometrics 125:305–53.

Spilerman, S., and F. C. Wolff. 2012. Parental Wealth and Resource Transfers: How They Matter in France for Home Ownership and Living Standards. Social Science Research 41:207–23.

Stock, J. H., and M. Yogo. 2005. Testing for Weak Instruments in Linear IV Regressions. NBER Technical Working Paper 284.

Tenhagen, H.-J. 2015. Warum Sie Ihre Lebensversicherung Nie Kündigen Sollten. Spiegel .

Vaisey, S., and A. Miles. 2014. What You Can - and Can’t - Do with Three-Wave Panel Data. Sociological Methods & Research 46:44-67.

Weil, D. N. 1994. The Saving of the Elderly in Micro and Macro Data. The Quarterly Journal of Economics 109:55–81.

Westerheide, P. 2005. The Importance of Intergenerational Transfers for Private Wealth Accumulation. Journal of Economics and Statistics/ Jahrbücher für Nationalökonomie und Statistik 225:459–481.

Wolff, E. 2002. Inheritances and Wealth Inequality , 1989-1998. The American Economic Review 92:260–64.

Wolff, E. 2015. Inheriting Wealth in America: Future Boom or Bust?. 1st ed.Oxford Univ Press.
Wolff, E., and M. Gittleman. 2014. Inheritance and the Distribution of Wealth or Whatever Happen to the Great Inheritance Boom. *Journal of Economic Inequality* 12:439–468.

Wolff, J. Forthcoming. Family Fortunes. *Law, Ethics and Philosophy*.

Zinnecker, S. 2018. Wenn Das Geld Ein Leben Lang Reichen Soll. *Finanztip*.

Zissimopoulos, J. M., B. R. Karney, and A. J. Rauer. 2013. Marriage and Economic Well Being at Older Ages. *Review of Economics of the Household* 13:1–35.
# Tables and figures

## Table 1—Summary statistics (matched sample)

### Panel A: Wave 1 (2010/2011)

|                  | All          |          | Herirs |          |          | Non-heirs |          |          |
|------------------|--------------|----------|--------|----------|----------|-----------|----------|----------|
| N                |              |          |        |          |          |           |          |          |
|                  |              |          |        |          |          |           |          |          |
| Private pension ownership | 118 | 0.729 0.446 | 55 | 0.727 0.449 | 63 | 0.730 0.447 |          |          |
| Private pension (EUR) | 118 | 22.558 35.195 | 55 | 20.452 29.153 | 63 | 24.397 39.873 |          |          |
| Household net income (EUR) | 118 | 3.623 2.952 | 55 | 3.754 3.342 | 63 | 3.509 2.585 |          |          |
| Household net wealth (EUR) | 118 | 235.512 604.679 | 55 | 266.595 809.878 | 63 | 208.377 342.224 |          |          |
| Household members | 118 | 2.585 1.208 | 55 | 2.564 1.151 | 63 | 2.603 1.264 |          |          |
| Household members employed | 118 | 1.551 0.853 | 55 | 1.564 0.788 | 63 | 1.540 0.913 |          |          |
| Male | 118 | 0.483 0.502 | 55 | 0.436 0.501 | 63 | 0.524 0.503 |          |          |
| Married | 118 | 0.661 0.475 | 55 | 0.673 0.474 | 63 | 0.651 0.481 |          |          |
| Age | 118 | 44.37 10.10 | 55 | 43.950 10.98 | 63 | 44.750 9.326 |          |          |
| Unemployed | 118 | 0.025 0.158 | 55 | 0.018 0.135 | 63 | 0.032 0.177 |          |          |
| Self-employed | 118 | 0.076 0.267 | 55 | 0.073 0.262 | 63 | 0.079 0.272 |          |          |
| Financial literacy | 118 | 2.831 0.399 | 55 | 2.745 0.480 | 63 | 2.905 0.296 |          |          |
| University degree | 118 | 0.424 0.496 | 55 | 0.418 0.498 | 63 | 0.429 0.499 |          |          |
| Financial risk tolerance | 118 | 1.602 0.587 | 55 | 1.564 0.601 | 63 | 1.635 0.576 |          |          |

### Panel B: Wave 2 (2014)

|                  | All          |          | Herirs |          |          | Non-heirs |          |          |
|------------------|--------------|----------|--------|----------|----------|-----------|----------|----------|
| N                |              |          |        |          |          |           |          |          |
|                  |              |          |        |          |          |           |          |          |
| Private pension ownership | 118 | 0.780 0.416 | 55 | 0.782 0.417 | 63 | 0.778 0.419 |          |          |
| Private pension (EUR) | 118 | 33.056 55.759 | 55 | 38.909 74.246 | 63 | 27.945 31.764 |          |          |
| Household net income (EUR) | 118 | 4.074 2.318 | 55 | 4.005 1.914 | 63 | 4.135 2.634 |          |          |
| Household net wealth (EUR) | 118 | 279.348 453.165 | 55 | 312.831 553.932 | 63 | 250.117 344.122 |          |          |
| Household members | 118 | 2.712 1.248 | 55 | 2.764 1.247 | 63 | 2.667 1.257 |          |          |
| Household members employed | 118 | 1.669 0.740 | 55 | 1.709 0.762 | 63 | 1.635 0.725 |          |          |
| Male | 118 | 0.483 0.502 | 55 | 0.436 0.501 | 63 | 0.524 0.503 |          |          |
| Married | 118 | 0.746 0.437 | 55 | 0.782 0.417 | 63 | 0.714 0.455 |          |          |
| Age | 118 | 47.74 10.08 | 55 | 47.20 10.92 | 63 | 48.210 9.345 |          |          |
| Unemployed | 118 | 0.025 0.158 | 55 | 0.036 0.189 | 63 | 0.016 0.126 |          |          |
| Self-employed | 118 | 0.110 0.314 | 55 | 0.109 0.315 | 63 | 0.111 0.317 |          |          |
| Financial literacy | 118 | 2.805 0.543 | 55 | 2.800 0.558 | 63 | 2.810 0.535 |          |          |
| University degree | 118 | 0.466 0.501 | 55 | 0.455 0.503 | 63 | 0.476 0.503 |          |          |
| Financial risk tolerance | 118 | 1.517 0.551 | 55 | 1.473 0.573 | 63 | 1.556 0.532 |          |          |

*Notes*—Panel A (Panel B) of this table reports descriptive statistics of households sampled from wave 1 (wave 2) of the Panel on Household Finances (PHF) administered by the Deutsche Bundesbank. Households that received a gift or inheritance prior to wave 1 and households in which the Finan
cially Knowledgeable Person (FKP) has retired or changed between the two waves are excluded from the sample. ‘Heirs’ are defined as households that, for the first time, received a gift or inheritance of more than 10,000 EUR between 2011 and 2014. ‘Non-
heirs’ are nearest-neighbor households, based on a propensity score matching, who did not receive a gift or inheritance of more than 10,000 EUR during the period under review.
Table 2—Gifts and inheritances

Panel A: Classification and donors

|                      | N  | %    | Donor of gift/inheritance | %  |
|----------------------|----|------|---------------------------|----|
| All                  | 55 | 55%  | Parents                   | 70.5|
| Gifts                | 23 | 41.8 | Grandparents              | 6.6 |
| Inheritances         | 32 | 58.2 | Other family              | 19.7|
|                      |    |      | No answer                 | 3.3 |

Panel B: Amount and asset type

|                      | N  | %    | Gift/inheritance (EUR)   |
|----------------------|----|------|--------------------------|
|                      |    |      | Mean   | Std.-Dev. | Median |
| All                  | 55 |      | 100,244 | 131,737 | 46,000 |
| including money      | 35 | 63.6 | 95,554  | 142,460 | 30,000 |
| including real estate| 25 | 45.5 | 150,360 | 166,051 | 90,000 |
| including securities | 1  | 1.8  | 70,000  | n.a.     | 70,000 |
| including other assets| 3 | 5.5  | 49,333  | 26,858  | 38,000 |

Notes—This table reports summary statistics of gifts and inheritances received by first-time heirs during the period under review (2011-2014). Statistics on the amount and asset type of gift or inheritance in Panel B are not mutually exclusive by category. “Other assets” include (i) land (ii) jewelry/furniture/art and (iii) life insurance.
### Table 3—Average treatment effect (ATE) on *private pension (EUR)*

|                  | N  | ATE     | AI Robust SE | z    | p-value |
|------------------|----|---------|--------------|------|---------|
| **ATE: Wave 1**  |    |         |              |      |         |
| Total            | 880| 2,511.38| 3878.961     | 0.65 | 0.517   |
| Treatment        | 60 |         |              |      |         |
| Control          | 820|         |              |      |         |
| **ATE: Wave 2**  |    |         |              |      |         |
| Total            | 880| 10,764.56**| 5024.869   | 2.14 | 0.032   |
| Treatment        | 60 |         |              |      |         |
| Control          | 820|         |              |      |         |

**Notes**—This table reports average treatment effect (ATE) results of a propensity score matching (PSM) approach with nearest neighbors. The PSM approach excludes households whose FKPs (i) changed, (ii) retired, or (iii) received a gift or inheritance of greater than 10,000 EUR prior to wave 1. The treatment group includes all households (N=60) who, between wave 1 and wave 2, received a gift or inheritance of greater than 10,000 EUR for the first time. ATE shows the difference in *private pension (EUR)* invested by either group of households. Robust standard errors are calculated following Abadie and Imbens (2011). ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively.
Table 4—Main results

| Dependent variable: ΔPrivate pension (EUR) | Dependent variable: ΔPrivate pension ownership (%) |
|-------------------------------------------|--------------------------------------------------|
| (1)                                       | (2)     | (3)     | (4)     | (5)     | (6)     |
| **Gift/inheritance received**              | **18456.9**    | **15267.7**   | 0.0085  | 0.0580  |
| (7276.5)                                   | (6845.9) |         |         |         |         |
| **Gift/inheritance (EUR)**                 | 0.104*** | 0.0751*** | -0.0000 |         |
| (0.030)                                    | (0.028) |         |         |         |         |
| **Household net income**                   | 1.734    | 1.662    | -0.0000 | -0.0000 |
| (1.733)                                    | (1.780) |         |         |         |         |
| **Household members**                      | 6326.8   | 6802.1   | 0.193***| 0.197***|
| (4753.3)                                   | (4415.0) |         |         |         |         |
| **Self-employed**                          | 26831.4''| 21406.6' | 0.267   | 0.284   |
| (12532.4)                                  | (12144.1)|         |         |         |         |
| **Financial advice received**              | 14080.0  | 14492.0  | 0.0240  | 0.0252  |
| (11696.0)                                  | (12097.2)|         |         |         |         |
| Household FE                               | YES      | YES      | YES     | YES     | YES     |
| N                                          | 236      | 236      | 236     | 236     | 236     |
| R² (within)                                | 0.067    | 0.134    | 0.057   | 0.117   | 0.140   | 0.140   |
| F-test                                     | 6.434    | 3.453    | 12.00   | 5.019   | 3.536   | 3.568   |
| p-value F-test                             | 0.0125   | 0.0060   | 0.0007  | 0.0003  | 0.0052  | 0.0049  |

Notes—This table reports coefficient estimates obtained from an OLS regression model applying a first difference approach of the generic form:

\[ \Delta \text{Private pension} = \beta_0 + \beta_1 \text{Gift/inheritance} + \gamma \Delta c + h + \varepsilon; \]

Specifications (1) and (2) show the effect of Gift/inheritance received on the change in private pension (EUR) invested by each household. Specifications (3) and (4) show the effect of the Gift/inheritance (EUR) on the change in private pension (EUR). Applying a Linear Probability Model (LPM), specifications (5) and (6) show the effect of Gift/inheritance received and Gift/inheritance (EUR) on the change in the probability of private pension ownership, respectively. All specifications include a vector of household-level control variables, \( c \), feature household fixed effects \( h \), and are estimated using robust standard errors reported in parentheses below the coefficients. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.
Table 5—Heterogeneous treatment effects

Panel A: Characteristics of heir-households

| Indicator variable                  | N     | $\beta_1$ | $\beta_1 + \beta_2$ | $\beta_2$ | $R^2$ | $\beta_1$ | $\beta_1 + \beta_2$ | $\beta_2$ | $R^2$ |
|------------------------------------|-------|-----------|---------------------|-----------|-------|-----------|---------------------|-----------|-------|
| Household net income _high         | 236   | 1,446.3   | 24,093.6**          | 22,647.3* | 0.1578| 0.0057    | 0.1178***           | 0.1122**  | 0.1322|
|                                   |       | (5,464.5) | (10,992.0)          | (13,069.0)|       | (0.0214)  | (0.0438)            | (0.0590)  |       |
| Household net wealth _high         | 236   | 4,287.6   | 25,536.5**          | 21,248.9  | 0.1515| 0.0077    | 0.1157***           | 0.1080**  | 0.1303|
|                                   |       | (7,352.3) | (12,487.5)          | (15,575.2)|       | (0.0258)  | (0.0418)            | (0.0480)  |       |
| Household male                     | 236   | 11,224.1* | 20,545.2            | 9,321.1   | 0.1303| 0.0278    | 0.1263**            | 0.0968*   | 0.1293|
|                                   |       | (6,453.9) | (13,061.5)          | (14,339.6)|       | (0.0192)  | (0.0509)            | (0.0511)  |       |
| Household married                  | 236   | 4,423.5   | 20,288.1**          | 15,864.6  | 0.1403| 0.0643**  | 0.0850              | 0.0208    | 0.1172|
|                                   |       | (5,844.4) | (12,487.5)          | (14,339.6)|       | (0.0285)  | (0.0549)            | (0.0564)  |       |
| Household age _high                | 236   | 7.2       | 26,558.1**          | 26,487.0* | 0.1657| -0.0028   | 0.1322***           | 0.1350*** | 0.1383|
|                                   |       | (5,107.8) | (11,659.7)          | (13,410.2)|       | (0.0217)  | (0.0477)            | (0.0503)  |       |
| Household university degr.         | 236   | 14,975.4  | 15,670.5**          | 695.1     | 0.1341| 0.0685**  | 0.1199              | 0.0515    | 0.1182|
|                                   |       | (10,653.5)| (7,730.6)           | (13,418.9)|       | (0.0303)  | (0.0790)            | (0.0839)  |       |

Panel B: Types of gifts or inheritances

| Indicator variable                  | N     | $\beta_1$ | $\beta_1 + \beta_2$ | $\beta_2$ | $R^2$ | $\beta_1$ | $\beta_1 + \beta_2$ | $\beta_2$ | $R^2$ |
|------------------------------------|-------|-----------|---------------------|-----------|-------|-----------|---------------------|-----------|-------|
| Gift/inheritance incl. real estate | 236   | 3,561.4   | 29,908.4**          | 26,347.0* | 0.1673| 0.0289    | 0.0855**            | 0.0566    | 0.1191|
|                                   |       | (3,902.8) | (14,395.0)          | (15,289.6)|       | (0.0404)  | (0.0342)            | (0.0573)  |       |
| Gift/inheritance anticipated       | 236   | 14,938.9  | 16,007.4*           | 1,068.5   | 0.1342| 0.0779**  | 0.0627*             | -0.0152   | 0.1169|
|                                   |       | (8,426.9) | (9,559.8)           | (11,917.8)|       | (0.0326)  | (0.0319)            | (0.0424)  |       |

Notes—This table reports coefficient estimates obtained from an OLS regression model applying a first difference approach of the generic form:

$$\Delta \text{Private pension (EUR)}_i = \beta_0 + \beta_1 \text{Gift/inheritance}_i + \beta_2 \text{Gift/inheritance}_i \times [\text{Indicator variable}_i] + \gamma \Delta c_i + h_i + \epsilon_i$$

Metric variables are dichotomized via median splits of the subsample; wave 1 values serve as the base for the split. The suffix _high denotes above-median values of the variable. For the first indicator variable, e.g., $\beta_1$ reports the effect of receiving a gift or inheritance on private pension (EUR) given the household is below the median net income. Analogously, $\beta_1 + \beta_2$ reports the effect for the household above the median net income. $\beta_2$ shows the difference in the reported effects for low and high net income households, respectively. Panel A is organized by heir-household characteristics; Panel B distinguishes gifts or inheritances including real estate as well as anticipated gifts of inheritances. All specifications include a vector of household-level control variables, $\phi$, feature household fixed effects $h_i$, and are estimated using robust standard errors reported in parentheses below the coefficients. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.
### Table 6—Anticipating a gift or inheritance

|                           | Dependent variable: $\Delta$Private pension (EUR) |
|---------------------------|---------------------------------------------------|
|                           | (1)                                              | (2) |
| Gift/inheritance anticipated | 12343.2***                                       | 4178.3 |
|                           | (4501.7)                                         | (6517.0) |
| Gift/inheritance received  | 12126.7                                          | (14085.0) |
| Household net income      | 7.583**                                          | (3.484) |
| Self-employed             | 37436.1                                          | (45157.2) |
| Financial advice received | 14993.1*                                         | (7772.1) |

|                      | YES                                      | YES |
|----------------------|------------------------------------------|-----|
| Household FE         |                                           |     |
| N                    | 364                                      | 364 |
| $R^2$ (within)       | 0.036                                    | 0.137 |
| $F$-test             | 7.518                                    | 3.273 |
| p-value $F$-test     | 0.0067                                   | 0.0075 |

**Notes**—This table reports coefficient estimates obtained from an OLS regression model applying a first difference approach of the generic form:

$$\Delta \text{Private pension (EUR)}_i = \beta_0 + \beta_1 \text{Gift/inheritance anticipated}_i + \gamma \Delta \mathbf{c}_i + h_i + \epsilon_i,$$

This model employs a different matched sample of N=182 households whose respective FKPs state to expect a gift or inheritance of greater than 10,000 EUR in the future. The matched sample excludes households whose FKPs (i) changed, (ii) retired, or (iii) stated that they expected a gift/inheritance already at point in time wave 1. Specification (1) shows the effect of Gift/inheritance anticipated on the change in private pension (EUR) in the matched sample. Specification (2) adds the controls Gift/inheritance received in the period 2011-2014 and changes in household net income or self-employment status and for financial advice received by a bank agent. All specifications include a vector of household-level control variables, $\mathbf{c}$, feature household fixed effects $h$, and are estimated using robust standard errors reported in parentheses below the coefficients. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.
Table 7—Instrumental variables approach

|                          | (1)        | (2)        | (3)        | (4)        |
|--------------------------|------------|------------|------------|------------|
| **Dependent variable: ΔPrivate pension (EUR)** |            |            |            |            |
| **Gift/inheritance anticipated (IV)** | 20627.9**  | 8714.7     | 21682.5*** | 9842.6     |
|                          | (7961.7)   | (8746.2)   | (7626.3)   | (7784.0)   |
| **Gift/inheritance received** | 10360.8    |            | 9921.7     |            |
|                          | (14081.6)  |            | (34298.6)  |            |
| **Household net income** | 7.052**    |            | 6.920**    |            |
|                          | (3.500)    |            | (3.442)    |            |
| **Self-employed**        | 34716.8    |            | 34040.8    |            |
|                          | (43789.5)  |            | (43298.6)  |            |
| **Financial advice received** | 14182.8*  |            | 13981.4*   |            |
|                          | (7750.9)   |            | (7723.2)   |            |

Household FE YES            YES            YES            YES
N 364                        364                        364                        364
R^2 (within) 0.020            0.133            0.015            0.131
F-test 6.713                  2.853            8.083            3.095
p-value F-test 0.0104         0.0167            0.0050            0.0105

Endogeneity test for main regressor
Chi^2 p-value (H0: exogenous) 0.1651         0.4032         0.1361         0.1393
F-test (First-stage) 160.06     117.63          79.59          58.04
p-value F-test (First-stage) 1.000           1.000           1.000           1.000
Kleibergen-Paap test
Chi^2 p-value (H0: underidentified) 0.000        0.000           0.000           0.000
Above “weak ID threshold” (Stock and Yogo 2005)

p-value Hansen J-statistic test
(H0: correctly identified) n/a (only 1 IV) n/a (only 1 IV) 0.3021 0.3596

Notes—This table reports coefficient estimates obtained from a two-stage least square (2SLS) regression model applying a first differences’ approach. We use instrumental variables (IVs) for the key explanatory independent variable “gift/inheritance anticipated”. The matched sample excludes households whose FKPs (i) changed, (ii) retired, or (iii) stated that they expected a gift/inheritance already at point in time wave 1. In Specifications (1) and (2), the independent dummy variable Gift/inheritance anticipated is instrumented by the indicator variable Households residence in 1989 was in West Germany. Specification (3) and (4) add a second instrumental dummy variable Household never received any gift or inheritance before wave 1 of PHF to jointly instrument for Gift/inheritance anticipated. This table reports first-stage regression results and tests for under- and overidentification. All specifications include household fixed effects and are estimated using robust standard errors reported in parentheses below the coefficients. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.
### Table 8—Other investments

|                  | Heirs                     | Non-heirs          | Diff. | t-stat. |
|------------------|---------------------------|--------------------|-------|---------|
|                  | Wave 1 | Wave 2 | Wave 1 | Wave 2 |        |        |
| Private pension (EUR) | 20,452 | 38,909 | 24,397 | 27,945 | 3,548 | 1.70* |
| Δ (Wave 2 - Wave 1) | 18,457 | -      | 3,548  | 14,909 | 1.70* |
| Private pension (EUR) | 21,349 | 49,768 | -      | -      |       |       |
| Δ (Wave 2 - Wave 1) | 25,419 | -      | -      | -      |       |       |
| Investment funds (EUR) | 5,369 | 6,619  | 8,091  | 10,457 | 2,366 | -0.22 |
| Δ (Wave 2 - Wave 1) | 1,250  | -      | -1,116 | -0.22  |       |       |
| Investment funds (EUR) | 6,635 | 7,555  | 833    | 3,267  |       |       |
| Δ (Wave 2 - Wave 1) | 920    | -      | 2,433  |       |       |       |
| Stocks (EUR)      | 3,004  | 3,504  | 18,876 | 19,321 | 55    | 0.01  |
| Δ (Wave 2 - Wave 1) | 500    | -      | 445    | 55     | 0.01  |       |
| Stocks (EUR)      | 3,498  | 3,645  | 1,233  | 3,000  |       |       |
| Δ (Wave 2 - Wave 1) | 147    | -      | 1,767  |       |       |       |
| Bonds (EUR)       | 953    | 1,011  | 5,159  | 4,095  | -1,063| 1.122 |
| Δ (Wave 2 - Wave 1) | 58     | -      | 1,122  | 0.36   |       |       |
| Bonds (EUR)       | 1,219  | 1,293  | 0      | 0      |       |       |
| Δ (Wave 2 - Wave 1) | 74     | -      | 0      | 0      |       |       |
| Home ownership (%)| 44%    | 69%    | 65%    | 67%    | 24pp  | 3.34*** |
| Δ (Wave 2 - Wave 1) | 25pp   | -      | 24pp   | 3.34***|       |       |
| Home ownership (%)| 47%    | 72%    | 49%    | 51%    | 2pp   |       |
| Δ (Wave 2 - Wave 1) | 26pp   | -      | 2pp    |       |       |       |

**Notes:** This table reports descriptive statistics on other investments that are suitable for old age saving, namely (i) other financial investment products (besides private pensions), i.e. investment funds, stocks and bonds, as well as (ii) real estate (i.e. measured by home ownership) for the treatment group “heirs” and the control group “non-heirs”. We calculate the absolute increase/decrease for all EUR values (as well as the percentage point increase/decrease for item home ownership) between the two waves. Within the treatment group “heirs”, we further divide into heir-households owning private pension products in wave 2 and those heir-households that don’t. The second-to-last and last column report the differences of the changes, as well as the t-statistic of a t-test for the equality of the changes. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.
Table 9—Long-term effect of intergenerational transfer on pension saving

|                                      | Old heirs (gift/inheritance received between 1990-2000) | Matched control group of non-heirs | Diff. | t-stat. |
|--------------------------------------|--------------------------------------------------------|-----------------------------------|-------|---------|
| Household net income (EUR)           | 228 4,256 2,815                                        | 228 4,650 6,112                    | -394  | -0.88   |
| Household net wealth (EUR)           | 228 597,302 873,090                                    | 228 495,851 802,709               | 101.451 | 1.25    |
| Household members                    | 228 2.632 1.229                                        | 228 2.781 1.261                    | -0.149 | -1.28   |
| Household members employed           | 228 1.680 0.756                                        | 228 1.728 0.794                    | -0.048 | -0.66   |
| Male                                 | 228 0.579 0.495                                        | 228 0.592 0.493                    | -0.013 | -0.28   |
| Married                              | 228 0.711 0.455                                        | 228 0.772 0.421                    | -0.061 | -1.50   |
| Age                                  | 228 51.02 9.22                                        | 228 50.83 10.56                    | 0.18   | 0.20    |
| Financial literacy                   | 228 2.706 0.5604                                       | 228 2.741 0.530                    | -0.035 | -0.67   |
| University degree                    | 228 0.404 0.492                                        | 228 0.430 0.496                    | -0.026 | -0.57   |
| Private pension ownership            | 228 0.768 0.423                                        | 228 0.759 0.429                    | 0.009  | 0.22    |
| Private pension (EUR)                | 228 51,522 89,121                                     | 228 35,097 54,171                 | 16,425 | 2.38**  |
| Gift/inheritance (EUR)               | 228 96,815 111,089                                     | -                      -            | -     | -       |

Notes—This table reports descriptive statistics of old heirs (households that received a gift or inheritance of more than 10,000 EUR between 1990 and 2000) and a matched control group of non-heir households. Wave 1 (2010/2011) figures of non-retired households are displayed, hence at least 10 years are in between the intergenerational transfer and the survey. To create our control group of non-heirs we conduct propensity score matching (PSM) with nearest neighbors (caliper of 0.01, no replacements). The second-to-last and last column report the differences between old heirs and the control group, as well as the t-statistic of a t-test for the equality of the means. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.
### Table A1—Variable descriptions

| Variable description                        | Description                                                                                                                                 |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| **Private pension (EUR)**                  | Continuous variable of a household’s total aggregated value of all private pension saving accounts (including state-subsidized private pensions, endowment life insurances and other non-subsidized private pension products; excluding all occupational pension plans and direct insurances); in EUR. |
| **Private pension ownership**              | Dummy variable equal one if household owns private pension products (as defined above), zero otherwise.                                      |
| **Gift/inheritance received**              | Dummy variable equal one if household has received a gift or inheritance with threshold value >10,000 EUR between survey wave 1 and 2 [2011-2014], zero otherwise. |
| **Gift/inheritance (EUR)**                 | Continuous variable specifying the euro value of received gifts or inheritances between survey wave 1 and 2 [2011-2014]; threshold value for gifts/inheritances to be included is >10,000 EUR; in EUR. |
| **Gift/inheritance anticipated**           | Dummy variable equal one if household expects to receive a large gift or inheritance in the future, zero otherwise.                         |
| **Household net income (ln)**              | Monthly net income of household in EUR (for the creation of propensity scores the natural logarithm of the variable is used).                |
| **Household net wealth (ln)**              | Total wealth less liabilities of household in EUR (for the creation of propensity scores the natural logarithm of the variable is used).     |
| **Household members**                      | Total number of household members                                                                                                         |
| **Household members employed**             | Number of household members within household that are in employment                                                                         |
| **Male**                                   | Dummy variable for gender of Financially Knowledgeable Person (FKP); equals one if respondent is male, zero for female.                     |
| **Married**                                | Dummy variable equal one if FKP is married, zero otherwise.                                                                                  |
| **Age**                                    | Ordinal variable expressing the age of the FKP                                                                                               |
| **Unemployed**                             | Dummy variable equal one if FKP is unemployed, otherwise zero.                                                                                |
| **Self-employed**                          | Dummy variable equal one if FKP is self-employed, otherwise zero. [Note: As control variable in panel regression, this covariate can be interpreted as “change into/out of self-employment”] |
| **Financial literacy**                     | Ordinal variable expressing the number of correctly answered “big three” financial literacy questions; score ranges from 0-3, dependent on correct answers to following questions: Question 1 (compound interest effect): “Let us assume you have a balance of € 100 in your savings account. This balance bears interest at an annual rate of 2%, and you leave it there for 5 years. What do you think: How high is your balance after 5 years?” [“Higher than €102 / Exactly €102 / Lower than €102”] Question 2 (inflation): “Let us assume that the interest paid on your savings account is 1% per year and the inflation rate is 2% per year. What do you think: After a year, will you be able to buy just as much, more or less than today with the balance in your savings account?” [“More / Just as much / Less than today”] Question 3 (diversification): “Do you agree with the following statement: ‘The investment in the stock of a single company is less risky than investing in a fund with stock in similar companies’?” [“I agree / I do not agree”] |
| **University degree**                       | Dummy variable equal one if FKP has a university degree, including university of applied sciences (“Fachhochschule”) , otherwise zero |
| **Financial risk tolerance**               | Ordinal variable measuring the households attitude towards financial risk; ranging from 1 (”We are not ready to take any financial risks”) to 4 (”We take significant risks and want to generate high returns”) |
| **Financial advice received**              | Dummy variable equal one if FKP has used a consulting service at the FKP’s principal bank in the past three years, otherwise zero.             |

**Notes**—The upper part of this table specifies the key dependent and independent variables used in our regression models. The lower part of the table lists all covariates used in the propensity score matching approaches and/or as control variables in our regression models.
Table A2—Summary statistics (all households)

Panel A: Demographics of relevant panel households

|                        | Group A: heirs |                                      | Group B: non-heirs |                                      | t-statistic | Difference in means |
|------------------------|----------------|--------------------------------------|-------------------|--------------------------------------|-------------|---------------------|
|                        | Gift/ inheritance received during 2011-2014: Yes |                                      | Gift/ inheritance received during 2011-2014: No |                                      |             | (Heirs vs. non-heirs) |
|                        | Wave 1         | Wave 2                               | Wave 1            | Wave 2                               |             | Wave 1              | Wave 2               |
| N                      | 111            | 1143                                | 1143              |                                      | 2.81***     | 2.79***             |
| Mean                   | 3,270          | 2,407                                | 2,407             |                                      | 2.79***     | 2.79***             |
| Std.-Dev.              | 3,063          | 1,856                                | 1,856             |                                      |             |                     |
| Median                 | 3,600          | 2,600                                | 2,600             |                                      |             |                     |
| Mean                   | 3,637          | 2,407                                | 2,407             |                                      |             |                     |
| Std.-Dev.              | 3,865          | 1,856                                | 1,856             |                                      |             |                     |
| Median                 | 4,000          | 2,600                                | 2,600             |                                      |             |                     |

Household net income (EUR)

Household net wealth (EUR)

Household members

Household memb. employed.

Male

Married

Age

Unemployed

Self-employed

Financial literacy

University degree

Financial risk tolerance

Private pension ownership

Private pension (EUR) (uncondtl' of ownership)

(continued on next page)
Panel B: Private pension saving in Germany

Wave 1 figures - conditional means displayed

| Ownership % | N | Mean | Std.-Dev. | Median |
|-------------|---|------|-----------|--------|
| Private pension products | 79.2% | 87 | 30.949 | 49.858 | 20,000 |
| t/o state-subsid. priv. pension | 48.9% | 52 | 9,405 | 33,661 | 7,050 |
| t/o endowment life insurance | 56.3% | 66 | 33,803 | 45,512 | 30,000 |
| t/o other private pension | 23.9% | 28 | 22,223 | 16,874 | 15,750 |

| Ownership % | N | Mean | Std.-Dev. | Median |
|-------------|---|------|-----------|--------|
| Group B: non-heirs (total N=1,143) |
| Asset amount in EUR (conditional on owning asset) | |
| Private pension products | 62.2% | 779 | 26,845 | 67,047 | 17,332 |
| t/o state-subsid. priv. pension | 37.1% | 438 | 6,810 | 37,894 | 3,000 |
| t/o endowment life insurance | 42.2% | 593 | 28,276 | 41,321 | 23,000 |
| t/o other private pension | 19.0% | 254 | 22,645 | 70,984 | 10,030 |

Notes: This table reports descriptive statistics of our overall sample of panel households. Households that are retired and households in which the Financially Knowledgeable Person (FKP) has switched during the survey are excluded. Group A includes households that did receive a gift/inheritance >10,000 EUR during period 2011-2014. Group B includes those who did not receive a gift/inheritance during this period. Note that households, who received a gift/inheritance in the years before wave 1 (2010/2011) are not excluded in this summary statistic yet (thus, the larger number of ‘heirs’). Panel A displays demographics for wave 1 and wave 2 of both groups. t-tests are calculated for the differences in means between Group A (heirs) and Group B (non-heirs) as displayed in last and second-to-last column. Panel B shows wave 1 (2010/2011) figures and displays conditional means. Taylor-linearized standard errors are used to estimate standard deviations. Data is weighted and representative of the German non-retired population, equal in representation to ~27M households. ***, ** and * indicate statistical significance at the 1%, 5% and 10% level, respectively.
Table A4—Panel weights and time fixed effects

|                      | Panel weights | Time FE |        |        |
|----------------------|---------------|---------|--------|--------|
|                      | (1)           | (2)     | (3)    | (4)    |
| **Gift/inheritance received** | 10897.8**     | 15173.9 |        |        |
|                      | (5132.5)      | (9304.6) |        |        |
| **Gift/inheritance (EUR)** | 0.0846***     | 0.0588** |        |        |
|                      | (0.0238)      | (0.0279) |        |        |
| **Household net income** | 2.552         | 1.386   | 1.731  | 1.503  |
|                      | (3.463)       | (3.338) | (1.756) | (1.677) |
| **Household members** | 1559.1        | 2492.2  | 6322.6 | 6308.9 |
|                      | (3331.9)      | (2492.9)| (4835.8)| (4852.9) |
| **Self-employed**    | 27832.0       | 11760.8 | 26808.8** | 21165.2 |
|                      | (22036.8)     | (10327.8)| (12787.0)| (13167.9) |
| **Financial advice received** | 11226.8       | 10758.9 | 14064.5 | 13572.7 |
|                      | (12268.1)     | (12094.5)| (11810.4)| (11841.9) |
| **Wave 2**           |               |         | 96.78  | 4733.1  |
|                      |               |         | (5280.3) | (3928.7) |
| Panel weights        | YES           | YES     | NO     | NO     |
| Time FE              | NO            | NO      | YES    | YES    |
| Household FE         | YES           | YES     | YES    | YES    |
| N                    | 236           | 236     | 236    | 236    |
| R² (within)          | 0.151         | 0.194   | 0.134  | 0.124  |
| F-test               | 2.238         | 8.288   | 3.599  | 4.586  |
| p-value F-test       | 0.0551        | 0.0000  | 0.00261| 0.000324|

Notes: This table reports coefficient estimates obtained from an OLS regression model applying a first difference approach of the generic form:

\[ \Delta \text{Private pension (EUR)}_i = \beta_0 + \beta_1 \text{Gift/inheritance}_i + \gamma \Delta c_i + h_{i|t} + \epsilon_i \]

Specifications (1) and (2) apply panel weights. Specifications (3) and (4) control for time fixed effects. All specifications feature household fixed effects \( h_i \) and are estimated using robust standard errors reported in parentheses below the coefficients. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.
Figure A1—Potential endogeneity and instrumentation framework

Notes—This figure visualizes the instrumentation of Gift/inheritance anticipated.