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Mind the gap: inheritance and inequality in retirement wealth

by Lukas Brenner and Oscar Stolper

Abstract: Drawing on detailed German 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 euros 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 wealth transfers; Bequest; Inheritance

An online appendix to this article is available at www.igjr.org.

Introduction and related research

In most developed economies, gifts and inheritances play a major role in sustaining and increasing household wealth.¹ 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/Schürz 2015; Gale/Scholz 1994; Kessler/Masson 1989; Wolff/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 euros 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 2001.²

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.

Recent research in the field of intergenerational justice has 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. It is argued that the economic consequences of inheritance are not a matter of how much people leave, but rather what people (expect to) receive. Intergenerational wealth transfers can have important effects earlier on in life, especially when it comes to retirement planning.

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. Specifically, we investigate the fraction of gifts and inheritances households use for the 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.³ 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 et al. 2015; Agarwal et al. 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 us to employ a difference-indifferences 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 euros, i.e. more than four times as much money in their private pension accounts as their sociodemographic twins among the group of non-heirs. To capture the magnitude of this effect over the household life-cycle, we perform two back-of-the-envelope calculations.⁴ 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 euros 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 euros 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 instalment amounts is statistically indistinguishable from zero.

Households who receive a gift or inheritance put on average 15,268 euros, i.e. more than four times as much money in their private pension accounts as their sociodemographic twins among the group of non-heirs.

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 et al. 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 to the contrary, 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 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 people's 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 currently 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.

Studying 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 evidence suggestive of a sustained long-term effect of intergenerational wealth transfers on individuals' private pension savings.

Data

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 German Central Bank, which is representative of the German population and provides us with detailed data on intergenerational wealth transfers. The PHF data are elicited via personal face-to-face interviews and cover a wide range of individual and household finances.⁵ Interviews with the 3,565 households sampled in the first wave of the PHF were conducted between September 2010 and July 2011. The second wave was administered 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 household member in charge of financial decision-making has either retired or changed between waves, which leaves us with a final sample of 1,254 households.

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.⁶ Using this data, we generate our first key explanatory variable *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 euros during wave 1 and wave 2 (henceforth referred to as "heirs") and zero for non-heirs.⁷ We choose to define a wealth transfer to be significant if it amounts to a minimum of 10,000 euros. This classification is despite the fact that a few respondents who were asked if they had "received a *larger* gift of inheritance" indicated smaller amounts. 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 *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.⁸

We capture private pension savings so as to include state-subsidised pension plans as well as endowment life insurances and all other private pension plans. Unlike other savings and investments, the stipulations of these vehicles typically include substantial early withdrawal penalties designed to discourage households from mid-life spending (cf. Beshears et al. 2015). Only recently, Agarwal, Pan and Qian (2019) corroborated the importance of such self-commitment features in pension savings plans by investigating what happens if they are partially removed: exploiting an administrative regulation in Singapore which allows individuals to withdraw between 10% and 30% of their pension savings at age 55, the authors show that many of the consumers under review use the increase in disposable income to pay down credit card debt and forgo much higher interest rates in their retirement

accounts by leaving a sizeable chunk of their withdrawn funds in a low-interest-bearing bank account long after withdrawal. In a similar vein, studies examining the effects of 401(k) loans discuss that granting early access to these commitment savings tends to result in increased present consumption (e.g. Beshears et al. 2008, 2011; Fleming et al. 1998).

Heirs in our sample differ from non-heirs along several dimensions.⁹ To circumvent a potential selection bias confounding our difference-in-differences analyses, we follow Andersen and Nielsen (2011) and apply a propensity score matching to identify the appropriate benchmark group of non-heir households. In doing so, we account for the fact that households with a higher education and income are, for example, more likely to come from a wealthier family background, which in turn increases the probability of receiving significant intergenerational wealth 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.

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 disposes of 3,623 euros in net monthly income (235,512 euros in net wealth); its member in charge of financial decision-making is about 44 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 euros in such contracts.

Additionally, table 2 provides summary statistics on the intergenerational wealth transfers under review. The average transfer amounts to 100,244 euros, and, notably, heirs with below-median household income on average receive larger gifts and inheritances (109,000 euros) as compared to households in the upper 50% of the income distribution (95,000 euros); 42% (58%) of transfers are gifts (inheritances), and the majority of assets (71%) are passed on by parents to their children.

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Results

Univariate evidence

As an initial assessment of the impact of receiving a gift or inheritance on private pension saving, we follow Abadie and Imbens (2011) and calculate the average treatment effect (ATE). 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 euros.

| | All | | | Heirs | | | Non-heirs | | |
|----------------------------|-----|---------|-----------|-------|---------|-----------|-----------|---------|-----------|
| | N | Mean | Std.-Dev. | N | Mean | Std.-Dev. | N | Mean | Std.-Dev. |
| 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 |

Notes—This table reports descriptive statistics of households sampled from wave 1 of the Panel on Household Finances (PHF) administered by the German Central Bank. Households that received a gift or inheritance prior to wave 1 and households in which the financially knowledgeable person 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 | | 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) jewellery/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 neighbours. The PSM approach excludes households whose FKPs (i) changed, (ii) retired, or (iii) received a gift or inheritance of greater than 10,000 euros 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 euros 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 3 reports the corresponding results. Initially, the group of heirs holds 2,511 euros more in their private pension savings account as compared to non-heirs; however, this difference turns out to be statistically insignificant. By contrast, we observe a statistically significant and economically meaningful difference in the amount of money households hold in their private pension accounts at wave 2: pension savings of heirs are 10,765 euros larger than those of the average non-heir household. 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.¹⁰

Main results

Our baseline multivariate analysis shows that households who receive a gift or inheritance during the three-year period between wave 1 and wave 2 put on average 15,268 euros more into their private pension accounts as compared to their sociodemographic twins among the non-heirs. Two simple back-of-the-envelope calculations illustrate the lifecycle effect of this difference. First, we might 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 euros to private pension accounts, it would take them roughly 14 years to accumulate the respective amount of old age provision. Second, given that the average financial decision-maker in our dataset is 47 years old by the time she receives the intergenerational wealth transfer and assuming that she retires at 67, the average difference of 15,268 euros in commitment savings accrues to more than 40,000 euros at retirement.¹¹ This difference controls for time-variant covariates which capture the impact of potential changes in household characteristics between the survey waves. Specifically, 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 et al. 2008). Further, we control for a switch to self-employment of the household member in charge of financial decision-making between the two waves. Because self-employed individuals typically exit the state-granted pension system, they should be more likely to save privately 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 advice has a positive effect on retirement saving (e.g. Shum/Faig 2006; Von Gaudecker 2015).¹²

Given that the average financial decision-maker in our dataset is 47 years old by the time she receives the intergenerational wealth transfer and assuming that she retires at 67, the average difference of 15,268 euros in commitment savings accrues to more than 40,000 euros at retirement.

Given that the average non-heir household puts a mere 3,548 euros in their private pension account between wave 1 (balance: 24,397 euros) and wave 2 (balance: 27,945 euros), funds from

a gift or inheritance, all else being equal, increase private pension savings in commitment contracts by as much as 330%.

Regarding the additional time-variant household characteristics likely to determine private pension savings, our evidence largely confirms prior evidence, i.e. shows 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.

Since most people inherit *something*, the dichotomy between heirs and non-heirs is admittedly somewhat arbitrary. Hence, to avoid obscuring the differences within the group of heirs, we follow Andersen and Nielsen (2011) and analyse how much of every euro in transferred funds is invested in private pension accounts. Univariately, this contribution amounts to a highly significant average of 10 cents per euro of wealth transfers. Even when we control for the above-mentioned 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 remains a highly statistically significant fraction of the average inheritance.

Since most people inherit *something*, the dichotomy between heirs and non-heirs is admittedly somewhat arbitrary. Hence, we analyse how much of every euro in transferred funds is invested in private pension accounts. Univariately, this contribution amounts to a highly significant average of 10 cents per euro of wealth transfers.

Finally, we examine if the documented increase in private pension savings stems from more households starting to save for old age after having received wealth transfers (volume effect) or, alternatively, if the households that already save privately simply scale up their investments (value 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 wealth 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.

Asset allocation of non-heir households

Of course, non-heir households might prefer to allocate their wealth to assets other than commitment savings, e.g. 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 is predominantly owed 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 homeownership of heirs and non-heirs, respectively, between wave 1 and 2.

We begin by investigating the securities investments of non-heir households. Straightforwardly, we choose the statistically and economically significant change in commitment savings between

our treatment and control group (14,909 euros) as a benchmark. Once we turn our attention to households' average allocation to investment funds, however, the difference between heirs and non-heirs is small and insignificant: while heirs increase their investments in mutual funds by 1,250 euros, non-heirs do so by only a slightly larger 2,366 euros. Similarly, our analysis does not suggest that non-heirs invest larger sums in stocks or bonds as compared to heir households. This evidence suggests 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 those heir households who do not own any private pension products in wave 2 (22% of heirs) possibly use other financial investments 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 *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, for example, an average increase of 2,433 euros among heir-households that previously were not invested in private pension products compares to an increase of merely 920 euros 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 euros).

Next, we investigate whether non-heirs disproportionately invest in private housing. Since 45.5% of all transfers include real estate (cf. table 2), the homeownership rate among heir-households – rather unsurprisingly – increases by 25 percentage points during the period in which they receive a gift or inheritance. By contrast, homeownership among non-heirs increases by a mere 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 instalment amounts is statistically indistinguishable from zero. Thus we rule out the alternative explanation that non-heirs focus on private housing as a way to provide for old age.

Taken together, the analyses reported in this section corroborate our main result that gifts and inheritances have a sizeable positive impact on households' old-age provision. This effect continues to hold even after controlling for other ways of investing the wealth transfers.

Our evidence suggests 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.

Long-term effects of intergenerational wealth transfers

The PHF data currently feature 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 wealth 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 euros 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*. 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 sum of the intergenerational wealth transfer in our treatment group is similar in size (96,815 euros) 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, at 16,425 euros, 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 supports the notion that intergenerational wealth transfers feature a long-term effect for private pension saving in commitment accounts.

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), for example, 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*.

Prior research suggests that children who expect to inherit from their parents tend to build their lives in part around that expectation. Households expecting future transfers might be less disciplined in putting aside money for their retirement.

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 2.¹³ Note that, unlike in our base-line analysis, which examines 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 a private pension. Braun (2015), for example, finds that households with more financial assets (*inter alia* private pension products) are more likely to receive gifts or inheritances in the future. Similarly, the literature confirms a positive impact of household wealth on private pension savings (e.g. Börsch-Supan et al. 2012; Bucher-Koenen/Lusardi, 2011). Thus, wealth in the household’s family likely affects both the expectation to receive a future transfer and the amount invested in private pension, i.e. presenting an endogeneity issue which could bias our multivariate results.

In order to address this methodological problem, 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 IV, we exploit the peculiarity that Germany was partitioned into distinct socialist and capitalist states until October 1990. Owing to the different economic systems, families of individuals in West Germany are more likely to have accumulated 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 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 et al. 2012), i.e. roughly 10 years apart from both the country’s reunification and the first PHF wave.

Yet, our main finding is that the mere anticipation of receiving a gift or inheritance at some point in the future does not decrease the amount currently put into private pensions accounts. If anything, results point towards an increase in private old age provision.

Further analyses

Prior literature on private pension saving behaviour finds substantial differences in saving patterns depending on household characteristics such as prior education (Börsch-Supan et al. 2008), age (Börsch-Supan et al. 2012), or income (Bucher-Koenen/Lusardi 2011). Rather unsurprisingly, Wolff (2002) and, more recently, Elinder, Erixson, and Waldenström (2018) show that less wealthy individuals tend to consume a larger share of their inheritance, whereas the rich are more likely to save a major fraction. Thus, we investigate if and how the effect of intergenerational wealth transfers on the amount of private pension savings varies across subgroups of households.

At 22,647 euros (or 11 cents per euro in funds received), we first document that households with an above-median net income invest a significantly larger share of a gift or inheritance in their private pension accounts. Notably, this difference is not explained by lower-income heir-households receiving smaller gifts and inheritances. Second, we find that wealthier households, in particular, use the transfer receipts to scale up private pension savings. We test an alternative explanation of this result, i.e. that heir-households with lower income and wealth levels use the received funds to pay down any unsecured debt prior to increasing private pension savings. Specifically, we include unpaid credit card bills, overdrafts and consumer loans, which average approximately 4,000 euros across households under review. Counterintuitively, however, we find that below-median income (below-median wealth) unsecured debt levels of heir-households slightly *increase* by 456 euros (806 euros).

Moreover, households in which the person in charge of financial matters is aged above the median of 45 years put a significantly higher fraction of gifts or inheritances into their private pension accounts. 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 financial decision-makers aged 45–65 years. Again, the difference cannot be explained by younger households receiving smaller gifts and inheritances.

Households in which the person in charge of financial matters is aged above the median of 45 years put a significantly higher fraction of gifts or inheritances into their private pension accounts. By contrast, the impact is close to zero for younger heirs.

In addition, our results suggest that married households partially drive the effect of gift and inheritance on pension savings, albeit not statistically significantly so. 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 et al. 2013).

Finally, first we test for potential heterogeneous treatment effects based on the nature of the gift or inheritance received. Indeed, we observe that real estate transfers lead to higher savings, which corroborates earlier evidence obtained by Westerheide (2005).

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) and, more recently, Wolff (2015) find that the mere expectation of receiving a gift or inheritance does not alter the households’ decision to save more or less. Applying a particularly well-designed identification strategy, Elinder, Erixson, and Waldenström (2018) use the Swedish population register to examine if expected inheritances affect individuals’ wealth and saving behaviour. Pairing decedents and heirs, they examine if an increase in decedents’ wealth leads to dissaving for heirs, but find no evidence of a measurable impact. In a related study addressing the effect of inheritance receipts on individuals’ probability of early retirement, Brown, Coile and Weisbenner (2010), for example, 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, Door-

ley and Pestel (2020) find no difference between expected and unexpected inheritances with respect to the households' decision to retire earlier. Extending this evidence, we report no significant difference in the effects of inheritances depending on whether or not the person in charge of financial decisions stated in wave 1 that the household expects to receive a gift or inheritance.

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 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 being equal, households who receive a gift or inheritance during the three-year sample period between 2011 and 2014 make on average 15,268 euros (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 euros 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 for 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 inher-

it 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 policy-makers.

Notes

1 While we realise 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).

3 Note that there are significant additional ways to save for retirement 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.

4 See section Main results for details on these calculations.

5 See Schmidt et al. (2017) and von Kalckreuth et al. (2017) for a technical documentation of the PHF.

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 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 for the first time expect a gift or an inheritance in wave 2.

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

10 For a comprehensive description of the econometric methodology as well as the detailed quantitative evidence generated in the multivariate analysis (including tabulated regression results), refer to the technical companion report: www.uni-marburg.de/de/fb02/professuren/bwl/behavioralfinance/forschung/artikel/brenner_stolper_mind_the_gap.pdf

11 The following data have been used: average monthly net incomes among the sampled non-retired households in 2011 and 2014 amounted to 2,466 euros and 2,679 euros, respectively (cf. Table A2). Average savings rates in Germany were reported to be 9.6% in 2011 and 9.5% in 2014 (Destatis 2018). Moreover, we apply the long-term average equity premium of 5% p.a. and assume payments are made at the beginning of each month. Finally, the 2018 Ageing Report issued by the European Commission (European Commission, 2018; p.56) forecasts an official retirement age of 67 years by 2030 in Germany.

12 Only recently, Dolls et al. (2018) show that being provided with personalised information about expected public pension payments stimulates individuals’ private retirement savings.

13 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 neighbour propensity score matching on households that fulfil these criteria. Thus the matched sample contains households that anticipate a transfer, as well as sociodemographic twins not expecting a gift or inheritance who populate the control group.

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