



## **A Comparative Analysis of Augmented Wealth in Germany and the United States**

Markus M. Grabka (German Institute for Economic Research, DIW Berlin), Timm Boenke (Free University of Berlin, Germany), Edward N. Wolff (New York University, United States), and Carsten Schroeder (FU Berlin and DIW Berlin)

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# A Comparative Analysis of Augmented Wealth in Germany and the United States

Timm Bönke<sup>1</sup>, Markus Grabka<sup>2</sup>, Carsten Schröder<sup>1,2,\*</sup>, and Edward N. Wolff<sup>3</sup>

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**Abstract.** Research on wealth inequality usually focuses on real and financial assets, while (public) pension wealth receives little attention. This paper provides for the first time evidence on the levels and composition of and inequalities in households' positions of augmented wealth – the sum of net worth and pension wealth – in two countries with distinct welfare regimes, the United States and Germany. Micro data from the Survey of Consumer Finances (SCF) for 2013 and the German Socio Economic Panel (SOEP) for 2012/13 serve as the empirical basis. Our analysis reveals that pension wealth makes up a sizeable portion of household wealth. On average, it constitutes 48% of augmented wealth in the United States and 59% in Germany. Including pension wealth also alters comparative positions in average and median wealth in the two countries. Average net worth in the US is US\$337,000, about twice as high as in Germany, while medians in the two countries are rather similar – about US\$40,000. At US\$651,000 average augmented wealth in the US is just 1.6 times higher, but in this case the median is slightly higher in Germany: US\$270,000 versus US\$247,000, which underlines the relative importance of pension wealth in Germany. In both countries, the incorporation of pension wealth in households' wealth positions reduces measured wealth inequalities, but wealth inequality is reduced more in Germany from the addition of pension wealth and remains markedly higher in the US. Age-wealth profiles show for both countries a typical life-cycle pattern of wealth accumulation. However, in Germany dissaving starts at earlier ages.

JEL codes: D31, H55, J32

Keywords: net worth, pension wealth, augmented wealth, wealth portfolio, SOEP, SCF

<sup>1</sup> Freie Universität Berlin, <sup>2</sup> SOEP at DIW Berlin, <sup>3</sup> New York University, \*: corresponding author

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## **1 Introduction**

The main objective of the paper is to compare the relative importance of pension wealth (PW)—at the household level—in two countries with different social welfare systems – Germany and the US. A related concern is how much pension wealth reduces overall wealth inequality in the two countries. As far as we are aware, this study represents the first time a “head-to-head” comparison of pension wealth and augmented wealth for two countries undertaken in a systematic way.

First, we find, perhaps not surprisingly, that pension wealth is more important in Germany because of its more extensive welfare state. On average, PW makes up 48% of augmented wealth, the sum of standard net worth and pension wealth, in the United States and 59% in Germany. Another reason for this finding is that other assets like stocks and bonds are relatively small in Germany. Second, we find that adding PW to net worth (NW) reduces overall wealth inequality more in Germany than the US. This is a consequence of the fact that PW is relatively larger in Germany and that PW is more equally distributed than net worth in the two countries.

This latter result is true despite the fact that the American public pension system, and the overall social-security system, is implicitly redistributive, providing a higher replacement rate for low income than high income workers, whereas the German public pension system (GRV) largely provides benefits that are proportional to accumulated earnings. This should make public pension wealth more equalizing in the US than in Germany. However, the relatively larger size of public pension wealth in Germany dominates the more progressive effect of the US pension benefit formula.

The remainder of the paper is organized as follows. Section 2 provides a brief review of comparative literature on pension wealth. Section 3 gives details on the German and U.S. pension system. Section 4 details methods and data underlying the empirical analysis. Section 5 presents comparative results on German and American wealth distributions. Concluding remarks are made in Section 6.

## **2 Literature review**

To date there appears to be a very limited amount of literature on pension wealth in advanced economies. There are only five studies – at least to our knowledge – deriving a broad wealth measure for the total population: Frick and Headey (2009), Frick and Grabka (2010, 2013), Wolff (2015) and Bönke et al. (2016).

In a cross-country comparison of German and Australian retirees (aged 65 and over) Frick and Headey (2009) provide information before and after considering public pension entitlements in the measure of net worth. Concerning levels of extended wealth, the authors find similar results for both countries. For standard net worth, the level is markedly higher in Australia. Furthermore, while net worth is clearly less equally distributed in Germany than in Australia, taking public pension wealth into consideration in the extended wealth measure brings inequality down to similar levels in the two countries.

The analysis of Frick and Grabka is based on statistically-matched data from the SOEP for Germany with individual insurance histories from German Statutory Pension Insurance. According to their estimate, the present value of total pension and state annuity entitlements amounts to an average of roughly 67,000 euros per adult, yielding augmented wealth exceeding 155,000 euros. The Gini coefficient is 0.799 for individual net worth and 0.637 for augmented wealth. In addition to the uncertainties regarding the matching process' precision, information on company pensions is only considered for retired pensioners.

The paper by Bönke et al. (2016) presents information about individual pension entitlements from all three pillars of the German pension system. In contrast to the papers by Frick and Grabka, Bönke et al. make use of information on pension entitlements directly surveyed in SOEP and use this data to derive the present value of pension wealth. The authors show that pension wealth is an important component of individual wealth in Germany, adding about 91,000 EUR to an average net worth of about 85,000 EUR, and that its inclusion in the individual wealth distribution implies a 25% reduction in the Gini coefficient.

Wolff (2015) shows for the U.S. in 2010 that total household pension wealth (the sum of Social Security wealth, defined benefit pension wealth, and defined contribution pension wealth) averages \$296,400 (in 2010 dollars) or 43% of augmented wealth. The Gini coefficient for net

worth (excluding defined contribution pension plans) is 0.894 and that for augmented wealth was 0.705, so that the addition of pension wealth to net worth caused a 21% reduction in measured inequality.

### **3 Pension institutions in Germany and the US**

Both the pension institutions in Germany and the US are comprised of a public and a private component. Beyond this common feature, the two countries' systems differ markedly with respect to generosity, coverage, attainment of entitlements, type of financing, etc. Below we provide a short description of the functioning of the pension institutions in both countries.

#### **3.1 Pensions in Germany**

The German pension system can be categorized into public and private insurance plans. The public pension system comprises the mandatory pension scheme for employees, for civil-servants, and for the liberal-profession. The private system comprises occupational pension schemes and private savings plans for retirement. In the public and private systems, with the exception of private savings plans, insured acquire pension entitlements throughout their working career, with pension entitlements being almost proportionate to overall earnings during the active phase. Further, including private savings plans, survivor pensions (for widows, widowers, and orphans) are granted.

##### *3.1.1 Public pensions*

###### *Mandatory public-pension scheme for dependent employees*

In 2014, about 78% (or 36.1 million) of the German working-age population (20-65 years) are insured through the mandatory public-pension scheme, the so-called statutory pension insurance (Gesetzliche Rentenversicherung, GRV) (Deutsche Rentenversicherung Bund 2015). The legal framework is Book 6 of the Social Security Code (SSC VI). According to §§ 50-53 SSC VI, an individual is vested in their pension plan after having contributed for five years, or 60

months.<sup>1</sup> Most importantly for the determination of statutory pension entitlements is the so-called equivalence principle which establishes a close relation between the sum of earnings liable to compulsory insurance during working life and pension entitlement after retirement.<sup>2</sup> In addition, pension entitlements can be gained during non-contribution periods: (i) sickness, rehabilitation, studies or higher education, and others (Anrechnungszeiten); (ii) military service or detention due to political reasons<sup>3</sup> (Ersatzzeiten); and (iii) child-raising or care of family members (Beruecksichtigungszeiten). Several types of statutory pensions are granted to the insured, with regular old-age pensions and pensions for long-term insured people being the most frequent types.<sup>4</sup> In addition, there are reduced-earnings capacity pensions, pensions for long-term unemployed, disability pensions, and special pensions for women, to name a few.<sup>5</sup> Besides the pension of the insured, survivor pensions are granted to widows, widowers, and orphans. In 2012 about 4.78 million widow and 0.574 million widower pensions were granted (BMAS 2012a). Widow(er) pensions in the public-pension scheme for dependent employees are determined based on the following basic rules:

1. The marriage must have lasted for at least 12 months.
2. A widow(er) pension is granted if the deceased partner was insured for at least five years.
3. A “large” widower pension is granted if the widow(er) is age 47 and above, has a reduced earnings capacity, or if there are children below age 18 living in the household. A “small” widow(er) pension is a temporary transfer for a widow(er) in working age.

The level of a widow(er) pension depends on the actual pension of the deceased partner as well as the financial situation of the widow(er), etc. We assume that the surviving partner is entitled to a “large” widow(er) pension, which is granted if the surviving partner has reached the age of

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<sup>1</sup> Several specific pension plans covering the members of specific occupational groups fall under the GRV, including the miners’ association (Knappschaft), seamen’s insurance association (Seekasse), and the agriculture pension scheme (Landwirtschaftliche Alterskasse).

<sup>2</sup> The actual pension entitlement is defined by the so-called pension formula detailed in SSC VI, section 4.

<sup>3</sup> In particular, this applies to former political prisoners in the GDR.

<sup>4</sup> Currently individuals are eligible for a full pension after having worked for 45 years, even if they have not yet reached the official retirement age (so called pension for the long term insured).

<sup>5</sup> For further details on the statutory pension insurance in Germany see Bönke et al. (2016).

47, has a reduced earnings capacity, or if there are children below age 18 living in the household. The widow(er) pension is reduced if the surviving partner has own incomes. If her/his net income exceeds a monthly basic allowance of EUR 803.88 in the old and EUR 756.62 in the new states in 2016, the survivor pension is reduced by 40% of the difference between the net income of the surviving partner and the allowance.

#### *Mandatory pension scheme for civil servants*

In the spirit of the equivalence principle, civil-servant pensions primarily depend on the overall tenure and average salaries in the last position that a civil servant has filled for at least two years. In 2011 roughly 2.9 million persons had entitlements from the civil servant pension scheme. For each year of full-time service, a civil servant collects 0.0179375 replacement points, with the regular maximum replacement rate being limited to 0.7175. The annual pension entitlement for civil servants is the product of the rate of replacement times the average annual salaries. If a civil-servant pension is credited in addition to a statutory pension, particular deduction rules apply.

The living basis for bereaved partner<sup>6</sup> of a civil servant is determined based on the following basic rules:<sup>7</sup>

1. The marriage must have lasted for at least 12 months for marriages after Dec. 31, 2001 - otherwise for three months. If the civil servant was above age 65 at wedding day and the wedding was childless, no survivor pension is granted.
2. A widow(er) pension is granted if the deceased partner was a civil servant for at least five years.
3. The widow(er) pension amounts to 60% (55%) of the pension of the deceased partner for survivors born before (after) Dec. 31, 1961.
4. The level of the widow(er) pension depends on the income situation of the widow(er) with particular deduction rules applying.

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<sup>6</sup> Due to data limitations and consistency, again we refrain from modeling orphan pensions.

<sup>7</sup> Exemptions from the general rules exist.

A widow(er) pension was received by about 311,000 individuals age 65 and older (BMAS 2012a).

#### *Entitlements from compulsory pension schemes of liberal profession associations*

The liberal professions are not insured in the standard statutory pension insurance but are compulsory insured through separate pension schemes, according to public law of the Laender. In 2014 about 1.4 million persons had entitlements from the liberal professions pension scheme (ABV 2016). The pension schemes of the liberal professions provide benefits as a compulsory system for members of special professional associations (Berufskammern): architects, chartered accountants, dentists, lawyers, notaries, pharmacists, physicians, and psychological psychotherapists. In total, there are 85 pension schemes serving the liberal professions, providing old age pensions, disability benefits, and survivors benefits. Consequently, entitlements cannot be determined by simple rules, but rather are highly individual. The determination of widow(er) pension follows the rules in the public pension scheme for dependent employees.

#### *3.1.2 Private pension plans*

##### *Occupational pension plans*

Occupational pension schemes (Betriebliche Altersvorsorge) are granted by a company to its employees, and comprise defined benefits (Leistungszusagen), defined contributions (beitragsorientierte Leistungszusagen), and contributions with minimum benefit.<sup>8</sup> About 56% (14.1 out of 25 million) of the mandatory insured employees aged between 25 and 65 in 2011 are covered under these schemes BMAS (2012b). The basic regulations pertaining survivor pensions in occupation pension plans<sup>9</sup> follow closely those in the statutory pension for employees. In line with the rules for the statutory pension system for employees, the widow(er)

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<sup>8</sup> There exist at least five different company pension plans in Germany starting with direct benefit plans, support funds (Unterstützungskasse), direct insurance (Direktversicherung), staff pension fund (Pensionskasse), and pension funds (Pensionsfonds), each with slightly different financing rules and benefit levels.

<sup>9</sup> Due to data limitations and consistency, again we refrain from modeling orphan pensions.



pension is reduced if the surviving partner has own incomes. Particularly, for the computation of the actual value of the widow(er) pension, two cases must be distinguished.

Case 1: widow(er) is retired and receives a statutory PAYG pension

According to § 55 (3) 2 of Germany's Civil Service Benefits Act (Beamtenversorgungsgesetz, BeamtVG), the full widow(er) pension is granted.

Case 2: widow(er) is retired and receives a civil servant pension

According to § 55 (2) 2 the complete widow(er) pension is granted, but the own civil servant pension is reduced. The deduction of the own pension is the sum of the widow(er)'s own pension plus her widower pension minus the maximum pension entitlement of the deceased person. The maximum entitlement of the deceased person is 0.75 times her pay grade.<sup>10</sup>

#### *Private savings plans for retirement*

Besides standard non-subsidized life insurances and related types of financial products, Germany provides financial aid to encourage private saving for retirement purposes. Particularly, in 2002 the so-called Riester and Rürup program has been introduced. The Riester scheme promotes certified financial products for retirement saving by means of generous subsidies and income tax deductions. A minimum saving effort of the beneficiaries is required. In case of the Rürup system, only tax deductions are granted. Basically, all compulsorily insured employees in Germany, including public servants, are eligible for support under the Riester scheme. In case of the Rürup system, initiated for self-employed, freelancers and high income earners, anyone can participate. Both Riester and Rürup guarantee a life-long pension.

#### *3.1.3 Generosity of pension system*

For the retired population, aged 65 or older, average monthly pensions vary markedly in Germany. By far the most important scheme is the statutory pension insurance, which covers 90% of the retired population and grants, on average, a gross monthly payment of 890 Euro in 2011 (Table 1). In contrast, only 5% are entitled to civil-servant pensions, with a mean value of little over 2,700 Euro. One principle reason for the higher average pension levels of civil

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<sup>10</sup> In this preliminary version, widow(er) pensions for civil servants are not considered in the analysis for Germany.

servants is a usually rather continuous occupational career without unemployment spells and with higher educational achievement. Additionally, the replacement rates of the civil servant pension scheme are more generous compared to the statutory pension scheme. Retirees who are covered by one of the liberal profession schemes also enjoy a relatively high monthly pension, about 2,100 Euro on average. Company pensions are typically voluntary and complement the statutory pensions. Thus company pensions are notably smaller than pensions in the other schemes, on average. One can differentiate between company pensions in the private and public sector. In the private sector, the mean pension amounts to about 500 Euro and 15% of the retired population have an entitlement, in the public sector the respective share is 10% and the monthly pension amounts to 300 Euro. This difference in levels is partly driven by a higher share of female earners in the public sector (Federal statistical office 2015a).

Table 1 also provides information about survivor pensions for females 65 years and older – reliable information for male survivors is not available. Again the majority of female survivor pensioners receive pension from the statutory pension insurance with a mean gross amount of 706 Euro/month. Similarly to the above findings, the highest pension is granted by the civil servant pension system for survivors with a mean pension of more than 1,400 Euro. The incidence and average level of survivor pensions from the other systems are noticeable lower.

**Table 1.** Pension by pension scheme (retired or widowed 65 years and older) in 2011

Pension scheme	Mean gross pension (Euro / month)	Share of recipients <sup>1</sup> (in %)	Mean gross pension (Euro / month)	Share of recipients (in %)
	Own entitlement		Female survivor pensions <sup>2</sup>	
Statutory pension	890	90	706	89
Civil servant	2,714	5	1,425	8
Liberal professions	2,140	1	897	1
Company (private sector)	491	15	298	13
Company (public sector (VBL))	315	10	248	7

Note. To derive PPP adjusted US-\$ in 2013, the EUR must be multiplied by  $1.02 \times 1.015/0.77$ . <sup>1</sup>Relative to all retired individuals living in Germany 65 year and older.

<sup>2</sup>Reliable information for male survivor pensioners is not available. However only 6% of males age 65 and older are receiving GRV survivor pensions. Source: BMAS (2012a: 82). Shares sum up to more than 100% because individuals can have multiple pensions.

Concerning the subsidized types of private pensions, about 15 million people have signed a Riester pension contract, and another about 2 million a Rürup pension.

### 3.2 Pensions in the US

The calculation of pension wealth in the US case differs from that of Germany in that it is based on *respondent* provided information on current and expected defined benefit plan benefits and current Social Security benefits. Future expected Social Security benefits for current workers are computed by formula. There are five types of Social Security benefits included in the definition of Social Security wealth: (a) retirement; (b) disability; (c) survivor; (d) spousal; and (e) dependent benefits.<sup>11</sup>

The retirement (or “old age”) benefit is determined by formula. Only “covered” workers – those employed in a job covered by the Social Security system – are eligible for the retirement benefit. In 2013, 98% of all workers were eligible for a Social Security benefit.<sup>12</sup> The steps are briefly as follows: First, coverage is assigned based on whether the individual expects to receive Social Security benefits and on whether the individual was salaried or self-employed. Second, on the basis of the person’s earnings history, the person’s Average Indexed Monthly Earnings (AIME) is computed. Rules in 2013 stipulated that for eligibility a worker must work a minimum of 40 quarters at a minimum earnings level in a covered job. The worker’s AIME is then based on the highest 140 quarter of earnings over the lifetime of the worker. Third, the person’s Primary Insurance Amount (PIA) is derived from AIME.

The formula is redistributive in that lower earning workers receive a higher percentage of their AIME in the computation of their PIA than higher earning workers. There is also a minimum Social Security benefit established by law. Since we are using the *accrual* value of Social Security wealth in order to be consistent with the German methodology, the accrual value is based on the individual’s AIME computed on the basis of the individual’s work history *to date* and the corresponding value of PIA.

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<sup>11</sup> This treatment differs from Wolff (2015) in that disability benefits are now included in the definition of Social Security wealth.

<sup>12</sup> One notable exception is federal government employees. They are covered by a separate civil service defined benefit pension program. Unlike the German case, the SCF does not distinguish between defined plans for public employees from those for private employees, so that the two groups are aggregated into a single group in the computation of defined benefit pension wealth.

The survivor benefit applies only to married couples. This is determined by the higher of two values: (1) the deceased spouse's PIA and (2) the individual's own PIA. The spousal benefit likewise applies only to married couples. It is determined by the higher of (1) 50% of the spouse's PIA and (2) the individual's own PIA.

For the computation of defined benefit (DB) pension wealth among retirees currently receiving DB pension benefits, the procedure is as follows. The SCF questionnaire indicates how many pension plans husband and wife are involved in and what the expected (or current) pension benefit is. The SCF questionnaire also indicates whether the pension benefits remain fixed in nominal terms over time for a particular beneficiary or is indexed for inflation. A separate computation of DB pension wealth is performed for each plan.

Among current workers the procedure is more complex. The SCF provides detailed information on pension coverage among current workers, including the type of plan, the expected benefit at retirement or the formula used to determine the benefit amount (for example, a fixed percentage of the average of the last five year's earnings), the expected retirement age when the benefits are effective, the likely retirement age of the worker, and vesting requirements. Information is provided not only for the current job (or jobs) of each spouse but for up to five past jobs as well. The respondent is also asked to indicate what his (or her) pension benefit will be based on his (or her) work history *to date*. The accrual value of DB pension wealth is then computed for each job indicated by the respondent.

#### **4 Data and definitions of wealth aggregates**

##### **4.1 German database: Socio-economic Panel**

The database used in the present study for Germany is the Socio-economic Panel (SOEP).<sup>13</sup> SOEP is an ongoing longitudinal survey of approximately 21,000 adult respondents, conducted annually since 1984 (see Wagner et al., 2007). A wide spectrum of topics, including household composition, employment, income, and so forth, is covered by SOEP. Information about private

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<sup>13</sup> Here we use the SOEP data version SOEPv30, DOI: 10.5684/soep.v30.

wealth was surveyed four times, in 1988, 2002, 2007, and 2012.<sup>14</sup> Since SOEP version v30 (survey year 2013), it consists of ten sub-samples, with seven pure random samples drawn in different survey years. The remaining three include two special migrant samples and a high-income sample to better capture the particulars of these populations. In contrast to other wealth surveys, the SOEP asks each adult respondent to provide information about her/his individual assets and debts.<sup>15</sup> However, the individual wealth information is here aggregated at the household level, to get comparable information surveyed in the SCF.<sup>16</sup>

Our computations rely on SOEP respondents living in private households participating in the 2012 and 2013 waves, and who were 18 or older in 2013. The need for the participation restriction arises because standard wealth variables are collected every five years; most recently in the 2012 wave (with asset values at the interview month). The current pension entitlements of the non-retired were only collected in 2013 (retrospectively for the previous year). Thus all information refers to 2012. We exclude observations lacking valid information.<sup>17</sup> This leaves a sample of 16,285 observations, representing a total weighted number of about 68.9 million individuals.

#### **4.2 US database: Survey of Consumer finances**

The data source for the US is the 2013 Survey of Consumer Finances (SCF) conducted by the Federal Reserve Board. Each survey consists of a core representative sample combined with a high-income supplement. In 1983, for example, the supplement was drawn from the Internal Revenue Service's Statistics of Income data file. For the 1983 SCF, an income cut-off of \$100,000 of adjusted gross income was used as the criterion for inclusion in the supplemental sample. Individuals were randomly selected for the sample within pre-designated income

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<sup>14</sup> Real and financial assets include property wealth, financial assets, business assets, private pension entitlements, building-loan contracts, collectables, and outstanding debt (from property or consumer credits). See for a documentation of the SOEP wealth information (Grabka and Westermeier, 2015).

<sup>15</sup> A potential benefit of surveying wealth information at the individual level is higher accuracy in contrast to surveys that exclusively rely on the answers of the reference person. This is particularly true for multi-person households. A potential drawback of the individual approach is higher probability of non-response.

<sup>16</sup> Any wealth held by children is not surveyed in SOEP, however, it can be assumed that this has only a negligible impact on overall wealth levels and inequality.

<sup>17</sup> In particular, we exclude Sample M (the migration sample) and Sample K, as for those respondents no information on wealth in 2012 was collected. Additionally, we exclude all observations with individual weighting factors of zero. An appropriate weighting scheme is available in SOEP to account for these exclusions.

strata. In later years, the high income supplement was selected as a list sample from statistical records (the Individual Tax File) derived from tax data by the Statistics of Income Division of the Internal Revenue Service (SOI). This second sample was designed to disproportionately select families that were likely to be relatively wealthy (see, for example, Kennickell, 2001, for a more extended discussion of the design of the list sample in the 2001 SCF). Typically, about two thirds of the cases come from the representative sample and one third from the high-income supplement.

#### **4.3 Comparability of data-sources**

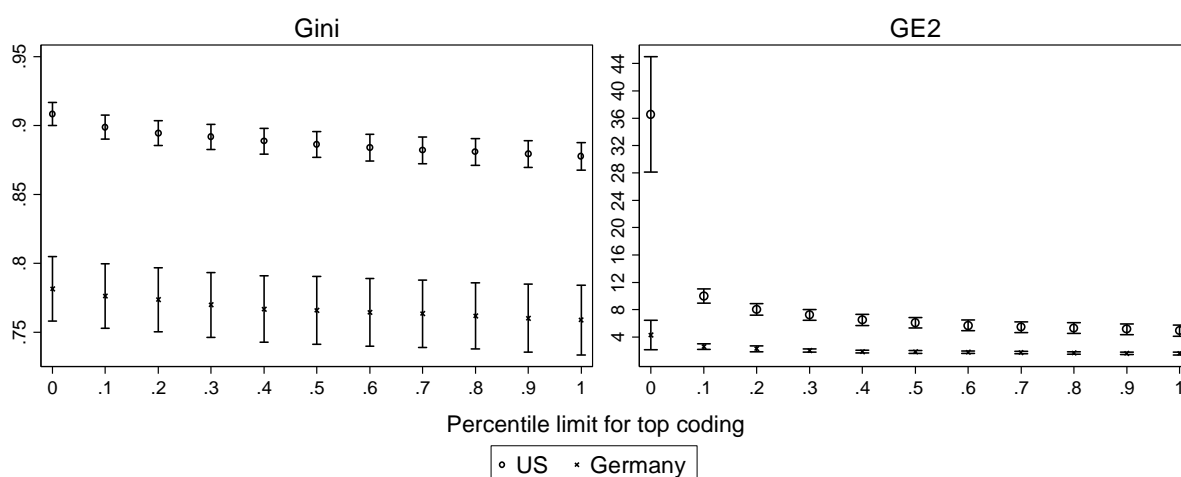
An important difference between the SCF and SOEP is the over-sampling of top wealth holders. The SOEP oversamples on the basis of household net monthly income with a threshold of 4,500 Euro per month. However, net household income is not perfectly correlated with wealth and additionally this threshold is relatively low and thus the oversampling does not target the very top of the wealth distribution.

In contrast, the SCF make use of specially edited individual income tax returns developed by Statistics of Income Division (SOI), to over-sample wealthy households—the so-called list sample. In a first stage, observations in areas selected for the first stage of the area probability sample are selected; while in a second stage the remaining cases are stratified using a model of wealth conditional on the variables in the SOI data. As a result, about 98% of the entire SCF sample with at least \$5 million of net worth in 2004 is observations from the list sample (see Kennickell 2008).

The different oversampling strategies have implications for the composition of the two samples at the very top of the wealth distribution. Beyond a threshold of US\$50 million there is no household observed in SOEP in 2012. However, billionaires also list in Germany, as documented by the Forbes List. In SCF, 216 households hold more than 50 million US\$, and the wealthiest household holds a net worth of more than 1.3 billion dollar. In sum, the SOEP data underestimate the wealth concentration at the top. As a result, obtained averages of wealth levels and inequalities should be seen as lower bounds of the actual situation in Germany.

In Figure 1 we show different trimming thresholds change net worth inequality measured by the Gini and Half-squared coefficient of variation (GE2). The thresholds range from the 99.9<sup>th</sup> to the 99.0<sup>th</sup> percentile. For the Gini coefficient, the implications of different trimming thresholds are mild. For GE2, which is sensitive to changes at the top, particularly the trimming at the 99.9<sup>th</sup> percentile has a strong downward effect in the US. For lower thresholds, the effect fades out. Irrespective of the threshold, observed inequalities are always higher in the US. Based on this evidence, we decided to apply a trimming threshold of 99.9<sup>th</sup> based on the country-specific distributions of net worth (see also Figure A1 for the effect of trimming on mean and maxima of net worth).

**Figure 1.** Effect of top trimming on net worth inequality using the Gini and GE2 coefficient



*Note:* All results based on multiple imputations, bootstrap 95% confidence interval indicated by bars. *Source:* SCF 2013 and SOEP v30/v31, own calculations.

#### 4.4 Definitions of wealth aggregates

Our empirical analysis focuses on four wealth aggregates: net worth, public pension wealth, private pension wealth, and augmented wealth.

We define net worth (w10) as the current value of all marketable or fungible assets (total gross wealth) minus current value of debts. Pension wealth is considered separately. Total gross wealth (w6) is the sum of owner occupied property (w1); other real estate (w2); tangible assets (w3); business assets (w4); financial assets plus building society savings agreements (w5). Total debt is the sum of: mortgage debts for owner occupied property (w7) or other real estate (w8);

and consumer debts (w9).<sup>18</sup> Pension wealth (w15) is the sum of public (statutory pension wealth (w11) and civil servant pension wealth (w12)), and private pension wealth (company pension wealth (w13) and value of private insurance contracts (w14)). Finally, augmented wealth (16) is the sum of net worth and pension wealth. Table 2 provides a summary of the definitions.

In the empirical analysis, wealth is measured at the household level (no equalization by means of an equivalence scale or by capita in the households) in 2013-US-\$ and PPP adjusted (factor 0.7773 as provided by OECD).<sup>19</sup>

**Table 2.** Wealth aggregates

<b>Acronym</b>	<b>Variable</b>
w1	owner-occupied property
w2	other real estate
w3	tangible assets (collectables such as jewelry, arts, etc.)
w4	business assets
w5	financial assets + building society savings agreements. <sup>1</sup>
w6	<b>Total gross wealth (sum w1 to w5)</b>
w7	mortgage debts - owner occupied property
w8	mortgage debts - other real estate
w9	consumer debts
w10	<b>net worth (w6 - (w7 + w8 + w9)) except retirement pension plans</b>
w11	statutory pension wealth
w12	civil servant pension wealth
w13	company pension wealth (DB pensions in the US case)
w14	private insurance contracts (DC pensions in the US case)
w15	<b>pension wealth (w11 + w12+w13+w14)</b>
w16	<b>augmented wealth (w10 + w15)<sup>3</sup></b>

*Note:* <sup>1</sup>This also includes equity in trust funds in the US case, as well as the cash value of whole life insurance plus the cash value of annuities (How much would you receive if you cashed in these annuities?). <sup>2</sup>This is not available in the US case. <sup>3</sup>The accounting scheme differs in two ways from Wolff (2015). First, net worth here excludes DC pension plans. (The comparable variable in Wolff, 2015, is NWX)). Second, the term “pension wealth” now refers to the sum of DB pension wealth, DC pension wealth, and also public pensions.

<sup>18</sup> Credit card debts and educational loans are not explicitly asked in the German SOEP as they are in the SCF.

<sup>19</sup> SOEP data from 2012 are converted to prices in 2013 with a consumer price index of 1.0015.



#### 4.5 Derivation of pension wealth

Pension wealth is defined as the sum of statutory pension wealth, civil servant pension wealth, company pension wealth, and private insurance contracts. For particular pension components, the surrender value can directly be taken from the data. In Germany, this is the case for private insurance contracts, in the US for defined contribution (DC) plans, including Individual Retirement Accounts (IRAS), 401(K) plans, and the like. If the surrender value is not provided, we take the gross present value of future expected pension entitlements accumulated until 2012. *Gross* means that pension entitlements are considered before taxes and social security contributions.<sup>20</sup>

All present values,  $PV^p$ , of future pensions from a particular pension scheme,  $p = stat, civil, comp$ , are adjusted for real interest rates and survival probabilities. The present value is defined as,

$$PV^p = \sum_{t=0}^T \frac{1}{(1+r)^t} \times \sum_p E_t^p \quad (1)$$

with:

1.  $T$ : end of the future observation period.
2.  $r$ : constant discount rate (here 2%);<sup>21</sup> and  $pension_t^p$  the pension entitlement from pension scheme  $p$ .
3.  $E_t^p$ : expected value of all individual pension entitlements in period  $t$  from system  $p$ .

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<sup>20</sup> Augmented wealth is an aggregate of several wealth components. For the interpretation of the level and distribution of augmented wealth, three aspects should be noted. First, financial wealth in the form of standard monetary deposits is not subject to taxes and social security contributions in Germany. However, when converting assets or real wealth into money, taxes may arise. The tax burden then depends on many unobserved tax-relevant characteristics (i.e., acquisition value, speculation and holding periods). Second, the current and the liquidation value of an insurance contract (e.g., of a life-risk insurance or private pension) can be different. This is because of, for example, insurance fees or repayment of tax reliefs or allowances (i.e., Riester and Rürup pensions). Third, if a wealth aggregate is determined by the present value of a future income stream (e.g., statutory or company pension) the future incomes are subject to social security contributions and/or taxes. We refrain from an approximation of net present values, given that it requires numerous assumptions about the future income composition, the future family status, etc. So, augmented wealth is comprised of wealth components that differ with respect to tax- and social-security burdens. This implies that, de facto, the convertibility of the different components is limited, an issue which, for the aforementioned reasons, is not reflected in the subsequent analysis.

<sup>21</sup> For the impact of alternative interest rates on substantive findings see Bönke et al. (2016), Table A1.

In a household, a retired person (including those with pensions for reduced earning capacity) receives the pension from period  $t = 0$  (year 2012) onward. A non-retired person receives the pension starting in a future period  $t > 0$ , defined by the person's age and the official retirement age.

An important difference between the US and German (public) pension system are pensions for widow(er)s. In Germany, a widow(er) pension is granted to the surviving married partner.<sup>22</sup> The central function of a widow(er) pension is to provide means for old-age provision in case of a divorce of a partner, while orphans pensions act as child support. In the US, the insurant's partner may be eligible for part of the partner's pension from retirement age and onward, but no additional widow(er) pension is granted. This has implications for the computation of expected pension values.

In the US, the expected value of a type  $p$  pension in period  $t$  is,

$$E_t^p = \sum_{i=1}^I d_{t,i}^p \times pension_{t,i}^p \times s_{t,i,g,c}. \quad (2)$$

Hereby,  $d_{t,i}^p$  is a dummy variable with value 1 if person  $i$  is eligible to the pension in the period  $t$ ,  $pension_{t,i}^p$  is her pension entitlement, and  $s_{t,i,c}$  is the probability that the person (gender  $g$  from birth cohort,  $c$ ) is still alive in  $t$  (survival probability).

In Germany, because of widower pensions, we must distinguish the following states for married couples:<sup>23</sup>

1. Both partners are alive in  $t$ . Then each partner receives his/her own individual pension. The probability of the first state is the joint survival probability of the male ( $m$ ) and female partner ( $f$ ),  $s_{t,i,m,c} \times s_{t,i,f,c}$ .
2. The male partner is deceased but the female partner is alive. Then the male partner's pension entitlements are zero and the female partner receives her own pensions plus a widow pension (if eligible). The probability of the second state is,  $(1 - s_{t,i,m,c}) \times s_{t,i,f,c}$ .

<sup>22</sup> Also orphan pensions are granted. However, our analysis deals with pension entitlements of the individuals, and thus orphan pensions are not considered in the expected values.

<sup>23</sup> Exemplary household survival rates for Germany are provided in Figure A1.

3. The female partner is deceased but the male partner is alive. Then the female partner's pension entitlements are zero and the male partner receives his own pensions plus a widower pension (if eligible). The probability of the third state is,  $s_{t,i,m,c} \times (1 - s_{t,i,f,c})$ .

The above generation of present values for today's entitlements follows the so-called "accrual method" (see Wolff 2015).<sup>24</sup> For the interpretation of the present values, it should be mentioned that entitlements from the liberal-professions scheme are not comprised in present values for the non-retired population but only for the retired.

## 5 Empirical findings

The subsequent comparative analysis is structured around three aspects. First, we provide a descriptive analysis of wealth levels in Germany and the US. Second, we complement findings on wealth levels with an inequality analysis. Wealth inequalities are examined by means of decile-specific wealth levels, wealth-aggregate specific inequality indices, and a factor decomposition of augmented wealth. Both the analysis in levels and the inequality analysis consider four wealth aggregates: net worth, public and private pension wealth, and augmented wealth. Third, we provide country-specific age-wealth profiles to study differences in wealth accumulation in the two countries.

### 5.1 Wealth levels in the United States versus Germany

Table 3 provides information on wealth for the United States and Germany. At first glance, the picture of wealth levels differs substantially between the two countries. For net worth, the mean value of about US\$164,000 in Germany amounts to only 49% of the mean value in the United States, about US\$337,000. Median net worth, however, is almost the same, about US\$40,000 in both countries. For both countries, we also find that net worth for the 25<sup>th</sup> percentile is zero. Indeed, only 73% (71%) of US (German) households is holding positive net worth. For the 75<sup>th</sup> percentile, net worth is even slightly higher in Germany: about US\$222,000

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<sup>24</sup> The figures reported in Wolff (2015) rely mainly on the conventional "on-going concern" treatment. It is assumed in this that employees continue to work at their place of employment until their expected date of retirement. The value of pension wealth is estimated as of the date of expected retirement.

compared to about US\$200,000 in the US. These numbers suggest that households in the United States, on average, hold more net worth than households in Germany, but at the same time the majority of US households is not better endowed. Part of the divide in average net worth probably comes from the oversampling of wealthy households in SCF, and the lack of high worth households (say, exceeding US\$50,000,000) in the SOEP.

Pension wealth is decomposed in two components, public and private pension wealth. Due to the compulsory nature of the public pension systems in both countries, about 95% of the total population is holding public pension wealth. The German pension system is more generous compared to the US system: average public-pension wealth in Germany amounts to about US\$197,000, which is somewhat higher than the value in the US, about US\$161,000. The value for the 25<sup>th</sup> percentile, however, is higher in the US: about US\$65,000 vs. US\$56,000 in Germany. The values for the median and the 75<sup>th</sup> percentile are slightly higher in Germany compared to the US. The results for private-pension wealth go in the opposite direction: the mean and values for all three considered percentiles are higher in the US. – that is, mean private pension wealth for the US is nearly US\$154,000 compared to about US\$39,000 in Germany.

A substantial divide in levels also pertain augmented wealth: an average US household possesses about US\$650,000, and thus 1.6 times the wealth of an average German household (about US\$400,000). This difference is mainly driven by higher net worth of US households that belong to the upper half of the augmented wealth distribution. In the lower half, households in Germany usually possess larger assets. For example, the 25<sup>th</sup> percentile value of augmented wealth is about US\$104,000 versus US\$86,000 in the US.

**Table 3.** Basic descriptive statistics by wealth aggregate

Wealth aggregate	Mean (SD)	P25	P50	P75	Fraction > 0 (SD)
<b>United States</b>					
Net worth	336,636 (11,735)	0	40,000	198,510	73.07 (0.64)
Public pension wealth	161,475 (2,102)	64,486	124,938	227,458	96.49 (0.30)
Private Pension wealth	153,351 (4,975)	0	13,000	139,877	61.69 (0.78)
Augmented wealth	651,462 (15,162)	85,989	246,531	607,288	95.75 (0.31)
<b>Germany</b>					
Net worth	163,986 (3,587)	0	38,912	221,998	70.77 (0.54)
Public pension wealth	196,968 (2,163)	55,606	144,268	284,156	94.80 (0.30)
Private Pension wealth	39,005 (1,913)	0	6,529	45,418	60.00 (0.56)
Augmented wealth	399,959 (5,057)	103,664	269,311	544,589	97.65 (0.23)

*Note:* Sample is top trimmed at 99.9 percent. All results based on multiple imputations, bootstrap standard deviation accounting for multiple imputation in parentheses. Nonlinear estimates (P25, p50, P75) based on first imputation only. *Source:* SCF 2013 and SOEP v30/v31, own calculations.

Details on household portfolios including different kinds of debt are detailed in Table 4. The table is subdivided in three panels. The top panel provides the composition of household gross overall wealth. The second panel provides the composition of household debts. The third panel provides debts to wealth and debts to income ratios.

With regard to the composition of household gross overall wealth, the most important difference between the two countries pertains to owner-occupied property. In Germany, this wealth component contributes 60% to gross overall wealth, but only about 40% in the US. Important differences also relate to the relative contributions of business assets and also to financial assets and building society savings agreements. Business assets contribute only about six percent to total gross overall wealth in Germany but almost 19% in the United States. For

financial assets and building society savings agreements, the respective numbers are 17% for the US and 28% for Germany.

Debt positions of households in the United States are markedly higher than in Germany. Average total household debts amount to about US\$91,000 among US households and US\$36,000 among German households. Mortgage debt on owner-occupied property makes up the largest relative portion in both countries: 74% in the US and 61% in Germany. Debt ratios in the US are higher in the US, both with respect to income and net worth (see panel 3 in Table 4). While the total debt to net worth ratio is 22% higher in the US, the US total debt to income ratio exceeds German ratio by almost 75%. Thereby, the indebtedness is higher in the US across all age groups (Table A2b), wealth and income classes (Tables A3b and A4b). In the US, especially the lower quintiles of the income and wealth distribution have a much higher debt ratio and the age-debt pattern differs from Germany. While in Germany middle aged households (34 to 45) exhibit the highest debt ratios (typically to acquire real estate), in the US it is the young with high consumer credits. The willingness to take up debt is much more common and the access to credit markets (and probably less of constraints) is seemingly easier than in Germany.

**Table 4.** Overall portfolio composition

	United States		Germany	
	Mean (US\$)	Share (%)	Mean (US\$)	Share (%)
(1) Composition of gross overall wealth				
Gross overall wealth except retirement pension plans (W6)	427,397 (12,304)	100.00 (0.00)	200,275 (3,740)	100.00 (0.00)
Owner-occupied property (W1)	168,568 (3,371)	39.44 (0.87)	120,770 (2,119)	60.30 (0.78)
Other real estate (W2)	56,768 (3,159)	13.28 (0.57)	30,781 (1,489)	15.37 (0.61)
Tangible assets (W3)	3,730 (0,420)	0.87 (0.10)	2,006 (0,147)	1.00 (0.07)
Business assets (W4)	80,625 (5,533)	18.86 (1.02)	12,103 (1,675)	6.04 (0.80)
Financial assets and building society savings agreements (W5)	117,707 (5,727)	27.54 (0.90)	34,615 (1,202)	17.28 (0.52)
(2) Composition of total household debt				
	Mean (US\$)	Share (%)	Mean (US\$)	Share (%)
Total household debt	90,761 (2,045)	100.00 (0.00)	36,289 (1,675)	100.00 (0.00)
Mortgage debts - owner occupied property (W7)	67,108 (1,660)	73.94 (0.77)	22,248 (0,771)	61.35 (2.95)
Mortgage debts - other real estate (W8)	8,168 (0,640)	9.00 (0.63)	8,814 (1,406)	24.24 (2.92)
Consumer debts (W9)	15,485 (0,563)	17.06 (0.59)	5,227 (0,494)	14.40 (1.18)
(3) Debt ratios (aggregate level)				
	Ratio	(SD)	Ratio	(SD)
Total debt/net worth	0.27	(0.01)	0.22	(0.01)
Total debt/household income	12.94	(0.30)	7.45	(0.28)

*Note:* Sample is top trimmed at 99.9 percent. All results based in multiple imputations, bootstrap standard deviation accounting for multiple imputation in parentheses.

*Source:* SCF 2013 and SOEP v30/v31, own calculations.

Table 5 provides decile-specific means of the four broad wealth aggregates (columns 1-4): net worth, private and public pension, as well as augmented wealth. Hereby, deciles are constructed separately for each wealth aggregate under consideration. Further, for each decile of augmented wealth, columns 5-7 provide the relative contributions of net worth, private as well as public pension wealth to augmented wealth.

Regarding mean wealth levels for net worth, the table confirms and sheds further light on the higher wealth concentration among households in the United States: Up to the 7<sup>th</sup> decile, net worth is always slightly higher in Germany than in the US, it is about equal for the 8<sup>th</sup> decile

(about US\$200,000), but in the top decile the value in the US is about 3-times the value in Germany: US\$2.5 million vs. US\$800,000. For public pension wealth, the country comparison reveals quite different patterns. While for the first two deciles mean public pension wealth is higher in the US, starting from the 4<sup>th</sup> decile mean pension wealth is always higher in Germany. In the top decile, the difference is more than US\$160,000, and 50% higher in Germany compared to the United States. For private pension wealth, German households in the lower deciles tend to own higher values, but the picture reverses for the upper deciles: in the 9<sup>th</sup> (10<sup>th</sup>) decile, private pension wealth amounts to about US\$309,000 (US\$865,000) in the US and US\$72,000 (US\$147,000) in Germany. Finally, coming to augmented wealth, the lower six deciles possess more wealth in Germany than in the US, while the opposite holds for the higher four deciles.

With regard to the relative contributions of net worth and pension wealth to augmented wealth along the deciles of augmented wealth, we find some quite similar patterns in both countries: For the bottom deciles, public pension wealth makes up the largest relative portion of augmented wealth, but this portion declines over the augmented-wealth deciles. For example, in the US (Germany) it falls from about 91% (78%) in the 3<sup>rd</sup> to 57% (62%) in the 6<sup>th</sup> to 29% (47%) in the 9<sup>th</sup> decile. At the same time, in both countries the portion of net worth increases over the deciles: from about 2% (11%) in the 3<sup>rd</sup> to 26% (29%) in the 6<sup>th</sup> to 40% (44%) in the 9<sup>th</sup> decile. The relative contributions of private pension wealth, however, show distinct patterns for both countries. In the US, the share increases systematically between the 3<sup>rd</sup> and 9<sup>th</sup> decile from about 7% to 31%. In Germany, for the same deciles the share non-systematically varies around 10%.



**Table 5.** Distribution of wealth by deciles

Decile	Mean (US\$)				As share of augmented wealth (%)		
	Net worth	Public pension wealth	Private pension wealth	Augmented wealth	Net worth	Public pension wealth	Private pension wealth
<b>United States</b>							
1	-31,364	20,355	2,106	-8,903	352.28	-228.62	-23.65
2	-6,784	47,690	3,719	44,625	-15.20	106.87	8.33
3	1,318	78,783	6,192	86,293	1.53	91.30	7.18
4	15,007	106,358	13,392	134,757	11.14	78.93	9.94
5	40,979	136,936	27,449	205,364	19.95	66.68	13.37
6	76,052	167,212	52,029	295,294	25.75	56.63	17.62
7	128,832	196,868	95,637	421,336	30.58	46.72	22.70
8	201,807	249,615	160,498	611,919	32.98	40.79	26.23
9	400,382	283,413	308,590	992,384	40.35	28.56	31.10
10	2,543,318	327,885	864,968	3,736,171	68.07	8.78	23.15
Overall	336,636	161,475	153,351	651,462	51.67	24.79	23.54
<b>Germany</b>							
1	-18,300	13,531	2,618	-2,151	850.65	-628.95	-121.70
2	1,833	41,250	6,514	49,597	3.70	83.17	13.13
3	11,254	79,349	10,776	101,380	11.10	78.27	10.63
4	27,896	116,030	16,184	160,111	17.42	72.47	10.11
5	52,572	155,417	22,067	230,056	22.85	67.56	9.59
6	90,191	193,442	27,372	311,005	29.00	62.20	8.80
7	137,894	232,944	35,757	406,594	33.91	57.29	8.79
8	199,230	293,032	50,105	542,367	36.73	54.03	9.24
9	328,921	353,719	71,546	754,186	43.61	46.90	9.49
10	809,548	491,571	147,309	1,448,428	55.89	33.94	10.17
Overall	163,986	196,968	39,005	399,959	41.00	49.25	9.75

*Note:* Sample is top trimmed at 99.9 percent. All results based on multiple imputations. Deciles refer to the augmented wealth distribution.

*Source:* SCF 2013 and SOEP v30/v31, own calculations.

## 5.2 Wealth inequalities in the United States versus Germany

We measure wealth inequalities by means of two indices: Gini index and the Half-squared coefficient of variation (GE2). The GE2 belongs to the generalized entropy class of inequality indices, and is particularly sensitive to changes at the top of a distribution, while the Gini is more responsive to changes in the middle and bottom of the distribution. The indices are computed for net worth, net worth plus private or public pension wealth, and augmented

wealth. Because indices are hard to interpret if the distribution entails observations that hold negative wealth, we have additionally re-done the analysis for the total population with a bottom coding of the wealth component at zero. Finally, to shed light on the inequalities among households that actually hold positive wealth, we have also derived all indices when excluding all households with zero or negative wealth. All results are detailed in Table 6.

We first comment on the results for the overall population. Pertaining net worth, our results confirm the previous finding of markedly higher inequalities in the US. The Gini index (GE2) is 0.892 (8.208) as opposed to 0.771 (2.245) in Germany. Adding public pensions to net worth reduces inequality. For example, the Gini index drops by about 21% (to 0.704) in the US. In Germany, the reduction is even stronger (30% to 0.543) due to the higher relevance of public pension wealth. Adding private pension wealth to net worth also reduces inequality, but the magnitude of the effect is smaller. In both countries, the Gini index declines by about seven percent. Adding public and private pension wealth to net worth, we obtain augmented wealth. From all four considered wealth aggregates, inequalities in augmented wealth are the smallest: the derived Gini index (GE2) for US households is 0.701 (3.080) as opposed to 0.537 (0.700) for German households.

Bottom coding at zero has a quite moderate effect on measured inequalities. Excluding households with zero or negative wealth yields markedly lower inequality indices. None of the two adjustments change the aforementioned general findings.

**Table 6.** Wealth inequality by wealth aggregate

Wealth aggregate	Total population		Total population, bottom coding at 0		Population with positive wealth component	
<b>Gini coefficient</b>						
<b>United States</b>						
Net worth	0.892	(0.005)	0.855	(0.004)	0.801	(0.005)
Net worth + public pension wealth	0.704	(0.006)	0.686	(0.006)	0.683	(0.006)
Net worth + private pension wealth	0.828	(0.005)	0.807	(0.005)	0.761	(0.005)
Augmented wealth	0.701	(0.006)	0.688	(0.006)	0.684	(0.006)
<b>Germany</b>						
Net worth	0.771	(0.012)	0.733	(0.005)	0.622	(0.007)
Net worth + public pension wealth	0.543	(0.006)	0.532	(0.005)	0.523	(0.005)
Net worth + private pension wealth	0.718	(0.010)	0.691	(0.005)	0.617	(0.006)
Augmented wealth	0.537	(0.006)	0.527	(0.005)	0.521	(0.005)
<b>Half-squared coefficient of variation (GE2)</b>						
<b>United States</b>						
Net worth	8.208	(0.483)	7.563	(0.333)	5.387	(0.244)
Net worth + public pension wealth	3.971	(0.216)	3.717	(0.159)	3.598	(0.154)
Net worth + private pension wealth	5.136	(0.248)	4.842	(0.186)	3.777	(0.150)
Augmented wealth	3.088	(0.143)	2.936	(0.113)	2.843	(0.109)
<b>Germany</b>						
Net worth	2.245	(0.173)	2.060	(0.158)	1.310	(0.112)
Net worth + public pension wealth	0.729	(0.038)	0.697	(0.037)	0.673	(0.037)
Net worth + private pension wealth	1.781	(0.131)	1.663	(0.124)	1.235	(0.099)
Augmented wealth	0.700	(0.036)	0.674	(0.035)	0.656	(0.034)

*Note:* Sample is top trimmed at 99.9 percent. All results based in multiple imputations, bootstrap standard deviation accounting for multiple imputation in parentheses.

*Source:* SCF 2013 and SOEP v30/v31, own calculations.

We complete the inequality analysis with a factor decomposition, suited to studying the role of each wealth component for inequalities in augmented wealth. To keep the empirical analysis tractable and because of a more intuitive interpretation, we restrict our attention to the Gini index. Following Lerman and Yitzhaki (1985), the Gini index can be decomposed as follows:

$$Gini = \sum_{f=1}^F r_f \times Gini_f \times s_f = \sum_{f=1}^F C_f = \sum_{f=1}^F c_f \times Gini. \quad (4)$$

Hereby,  $Gini$  denotes the Gini index of augmented wealth;  $r_f$  the Gini correlation between wealth component  $f$  (with  $f = 1, \dots, F$ ) and augmented wealth;  $Gini_f$  the Gini index for wealth component  $f$ ; and  $s_f$  the share of component  $f$  in augmented wealth. The Gini correlation  $r_f$  measures the dependence between two random variables. Its properties are a mixture of Pearson's and Spearman's correlations. For any given marginal distributions, the range of Gini correlation is  $[-1, 1]$  (see Schröder et al., 2014). The product  $C_f = r_f \cdot Gini_f \cdot s_f$  can be interpreted as the overall contribution of a particular wealth aggregate to overall inequality in augmented wealth, while  $c_f = \frac{C_f}{Gini}$  gives the relative contribution.

Table 7 summarizes the results from the factor composition. As pointed out above, net worth is the key driver of augmented wealth inequality. Its relative contribution ( $c_f$ ) is about 63% in the US and 53% in Germany. In the US, the second most important driver is private pensions with 25%, followed by public pensions with 12%. In Germany, the second most important driver is public pensions with about 37%, followed by private pensions with 10%. The wealth component-specific inequalities had already been addressed in Table 6. Of interest, however, are the Gini correlations. The correlation is highest for net worth – exceeding 0.9 in both countries – indicating a rather strong statistical dependence between net worth and augmented wealth. Gini correlations for public pension wealth are lower, yet again at comparable levels for both countries – 0.790 in the United States vs. 0.824 in Germany. Correlations for private pension wealth differ markedly in the two countries. The correlation is 0.901 in the United States and 0.678 in Germany, suggesting that the statistical association between private pensions and augmented wealth is lower in Germany.

A potential explanation for the lower correlation in Germany might be so-called Riester-pensions, a subsidized voluntary private saving scheme for retirement, which explicitly facilitate savings of parents with low income households, who usually do not hold significant net worth (see Corneo et al. 2015). There is also evidence that the Riester scheme crowds out savings in non-subsidized savings schemes (see Corneo et al. 2009 and 2010). Other potential

explanations are differences between wealthy and non-wealthy households in risk and time preferences, financial literacy, or access to financial products.

In neither country is the Gini correlation negative. Hence, none of the three wealth components is negatively associated with augmented wealth. The general messages from a factor composition of GE2 are the same and the results are detailed in Table A1 in the Appendix.

**Table 7.** Inequality decomposition using the Gini-coefficient

Wealth aggregate	Components			Contribution	
	$r_f$	$s_f$	$Gini_f$	$C_f$ (absolute)	$c_f$ (relative, %)
<b>United States</b>					
Net worth	0.960 (0.036)	0.517 (0.008)	0.892 (0.167)	0.442 (0.084)	63.12 (1.23)
Public pension wealth	0.790 (0.020)	0.248 (0.006)	0.441 (0.082)	0.086 (0.016)	12.33 (0.51)
Private pension wealth	0.901 (0.039)	0.235 (0.005)	0.811 (0.151)	0.172 (0.032)	24.55 (0.98)
Total inequality (augmented wealth)			0.701	0.701	100.00
<b>Germany</b>					
Net worth	0.900 (0.025)	0.410 (0.006)	0.771 (0.123)	0.284 (0.047)	53.00 (1.03)
Public pension wealth	0.824 (0.017)	0.492 (0.004)	0.494 (0.077)	0.201 (0.031)	37.40 (0.95)
Private pension wealth	0.678 (0.029)	0.098 (0.004)	0.779 (0.125)	0.052 (0.009)	9.60 (0.61)
Total inequality (augmented wealth)				0.537	100.00

*Note:* Sample is top trimmed at 99.9 percent. All results based in multiple imputations, bootstrap standard deviation accounting for multiple imputation in parentheses.

*Source:* SCF 2013 and SOEP v30/v31, own calculations.

### 5.3 Age-wealth profiles

According to the life-cycle hypothesis, wealth increases up to retirement age and decreases smoothly thereafter, implying a hump-shaped age-wealth profile (Ando and Modigliani 1963). With simple cross-sectional data at hand, we are not able to distinguish between age, period

and cohort effects. Thus, we simply provide estimates of wealth profiles using variation over age in the 2012 (for Germany) and 2013 (for the US) cross section respectively.

For both countries, we estimate age-wealth profiles, using the age of the household head as explanatory variable. The age-wealth profiles are presented for the four wealth aggregates, namely net worth, public and private pensions, and augmented wealth (see Figure 2). Predictions of wealth-age profiles rely on OLS-regressions for multiply imputed data. Suppressing an index for the two wealth aggregates, the specification is,

$$W_h^f = \alpha + \beta \times age_h + \gamma \times (age_h)^2 + \delta \times (age_h)^3 + \varepsilon_h \quad (5)$$

with  $W_h^f$  denoting wealth aggregate owned by household  $h$  of wealth aggregate  $f$ ,  $age_h$  the age of the household head in years, and  $\varepsilon_h$  the error term. Age is considered with a quadratic term, which considers the typical dissaving effect after retirement, while the polynomial of the third order is used for robustness purposes.

For the graphical presentation in Figure 2, we normalized the estimated wealth profiles in a country by the respective mean value at the age of 45 to ease the comparisons by controlling for the substantial difference in wealth levels in Germany and the US.<sup>25</sup>

The general message from Figure 2 is that all estimated wealth profiles support the life-cycle hypothesis, exhibiting the expected hump-shaped profile. It is also interesting to note that for both countries the shapes of net worth profiles and augmented wealth are very similar up to the age of 60. For higher ages, in Germany there is a somewhat stronger dissaving effect than in the US, also starting at earlier ages. One potential explanation is differences in the taxation rules of bestowal: In Germany every ten years up to 400,000 Euros can be assigned tax free from a parent to a child, while in the US the respective annual tax exemption is only US\$14,000. This difference may have a stimulating effect on making transfers from parents to children at earlier ages in Germany.

For public pension wealth we find a steeper profile in Germany compared to the US before retirement. One candidate explanation is the tighter relationship between earnings and pension entitlements in Germany, the principle of equivalence. This principle implies that the

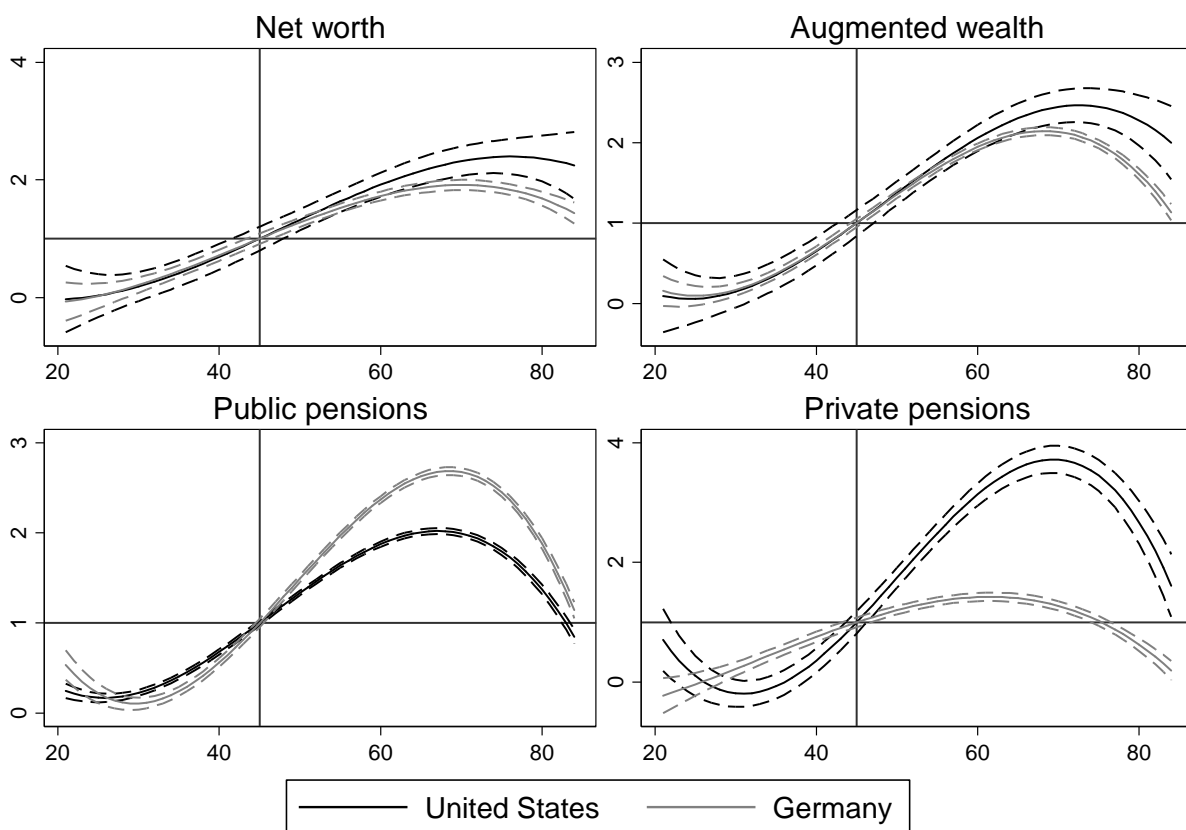
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<sup>25</sup> Additionally, Figure A3 in the Appendix provides age-wealth profiles for three aggregates: (a) net worth plus public pensions; (b) net worth plus private pensions; (c) total pension wealth.

age profile for public pension wealth closely tracks the earnings profile. In the US, replacement rates decrease in earnings, meaning that age profiles for earnings and public pension wealth are linked to a weaker extent.

For private pension wealth, the age profile is markedly steeper in the US compared to Germany. In the US, mean wealth increases by the factor 3.6 between 45 and 65, while in Germany the private pension wealth at 65 is 1.4 times the amount at 45. For higher ages, the gap between the profiles declines.

**Figure 2.** Normalized age-wealth profiles



*Note:* Sample is top trimmed at 99.9 percent. All results based in multiple imputations. Dashed lines represent 95% confidence bands. *Source:* SCF 2013 and SOEP v30/v31, own calculations.

## 6. Conclusion

We find that in 2013 average net worth in the US is US\$337,000, about twice as high as in Germany, while medians in the two countries are rather similar – about US\$40,000. We also find that pension wealth makes up a sizeable portion of household wealth – 48% on average of augmented wealth in the United States and 59% in Germany. Average public pension wealth in dollar terms is higher in Germany than the US\$197,000 versus US\$161,000 but the reverse is true for private pension wealth – US\$39,000 versus US\$153,000. Average total pension wealth is therefore higher in the U.S. – US\$315,000 versus US\$236,000. Including pension wealth also alters the relative positions in average and median wealth in the two countries. At US\$651,000 average augmented wealth in the US is 1.6 times higher than in Germany but the median is slightly higher in Germany: US\$270,000 versus US\$247,000, which underlines the relative importance of pension wealth in Germany.

In both countries, the incorporation of pension wealth in the household portfolio positions reduces measured wealth inequalities, but wealth inequality is reduced more in Germany from the addition of pension wealth than in the U.S. Pertaining to net worth, our results confirm the previous finding of markedly higher inequalities in the US. The Gini index is 0.892 in contrast to 0.771 in Germany. Adding public pensions to net worth reduces inequality. The Gini index drops by 21% (to 0.704) in the US, while in Germany the reduction is even stronger (30% to 0.543) due to the higher importance of public pension wealth. Adding private pension wealth to net worth also reduces inequality, but the magnitude of the effect is smaller. In both countries, the Gini index declines by about seven percent. Adding public and private pension wealth to net worth, we obtain augmented wealth. Adding public and private pension wealth to net worth lowers the Gini index in US by 0.191 points, from 0.892 to 0.701 or by 21.4%; in Germany it is lowered by 0.234, from 0.771 to 0.537, or by 30.3%. The redistributive impact of pension wealth is therefore greater in Germany. The primary effect is from public pension wealth and reflects the higher magnitude of public pension wealth in Germany in both dollar and relative terms.

There are a number of additional concerns that arise. First, in general, we should expect that a more extensive social safety net as is found in Germany relative to the U.S. would imply



that middle class and poor Germans need to save less for job loss, sickness and old age than corresponding Americans. This is particularly so because public pensions are higher in Germany than the U.S. Also, university education is free in Germany, which means that unlike Americans there is no need to save for university tuition. In general, one would think that a greater social safety net would mean less need for precautionary savings. However, median net worth is actually higher in Germany than the U.S. This is a puzzle. It is even more of a puzzle since the homeowner rate is lower in Germany.

Second, mortality rates are lower in Germany than the U.S. and this differential would imply, *ceteris paribus*, greater pension wealth in Germany. Quantitatively, how much of the gap in pension wealth, particularly public pension wealth, does this explain? Third, recent research has shown that there are large differences in life expectancies by socio-economic characteristics like education and income. If such differentials are incorporated into mortality tables used to estimate pension wealth, how much would the equalizing effect of pension wealth be reduced? It is also possible that the gradient of life expectancy by income is greater in the U.S. than in Germany. If so, how would the comparative effects of pension wealth on overall wealth inequality change? Fourth, there was (and still is) a large gap in net worth between East and West Germany. How does this difference affect the German results on mean and median net worth and inequality?

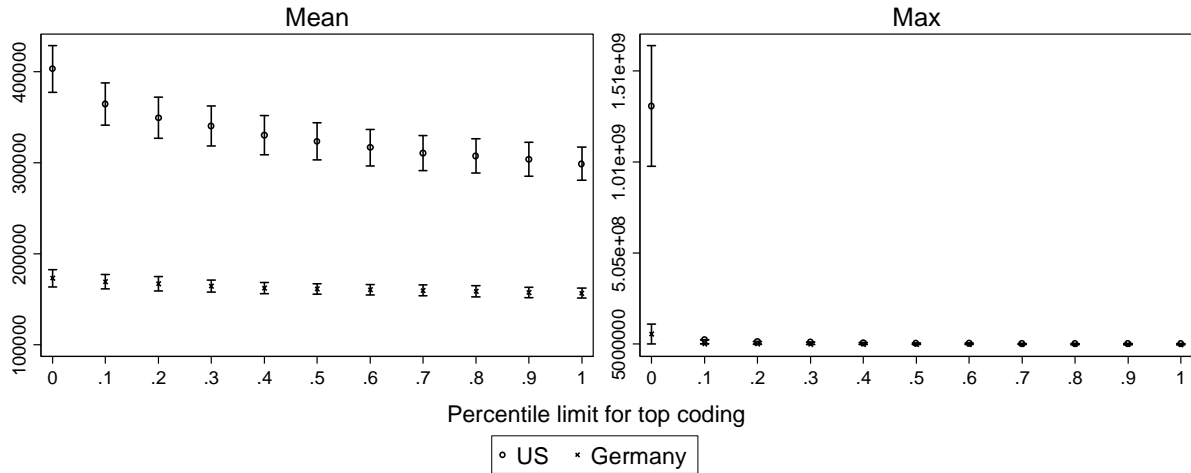
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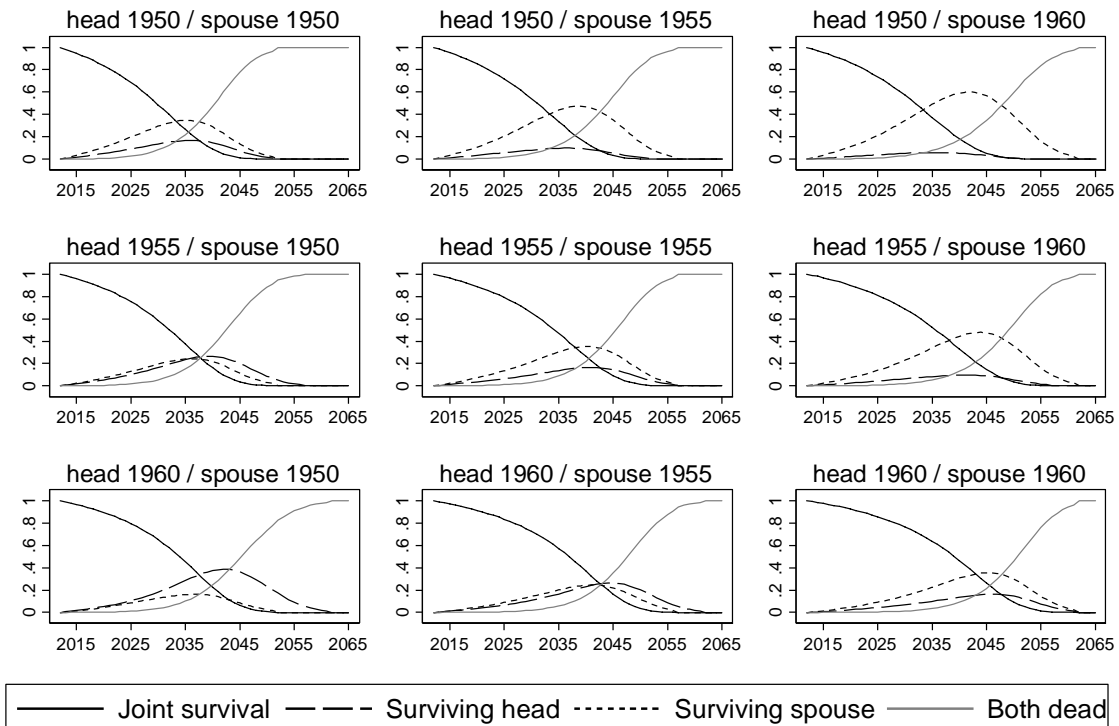
## 7. Appendix

**Figure A1.** Effect of top trimming on mean and maxima of net worth

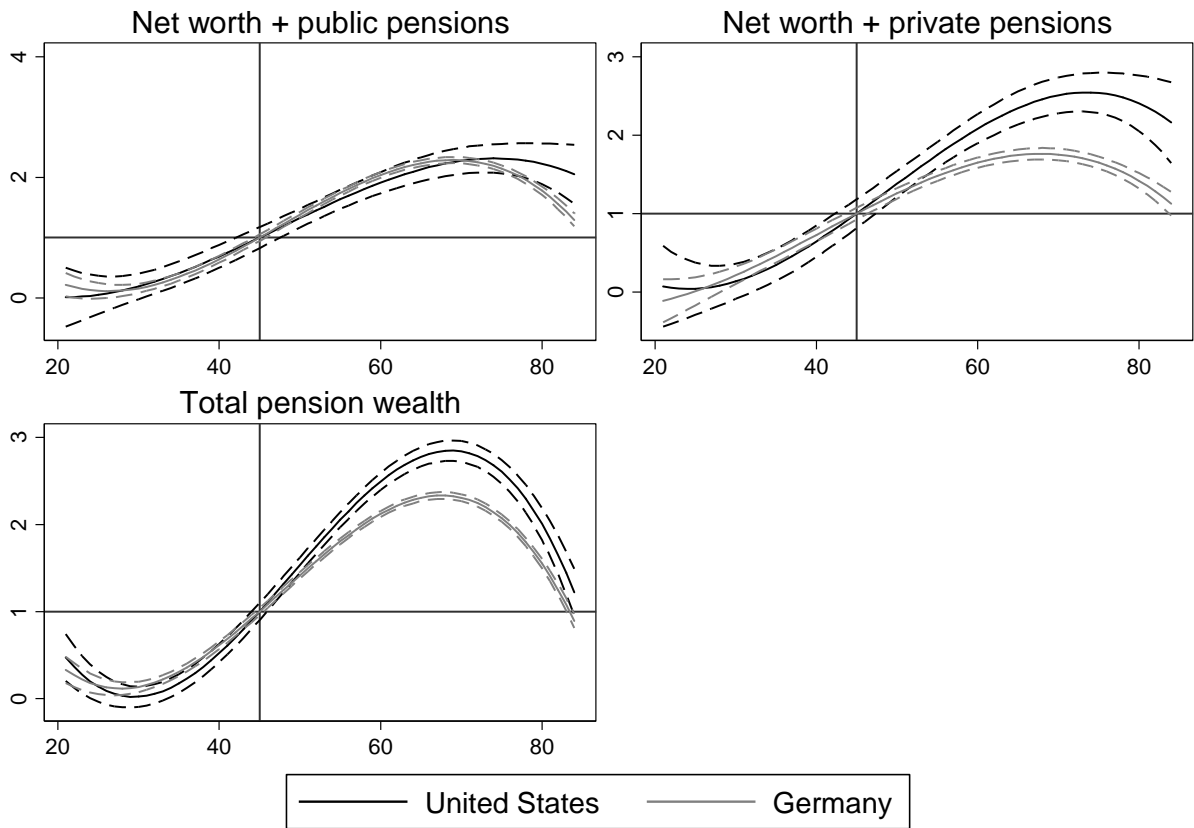


*Note:* All results based on multiple imputations, bootstrap 95% confidence interval indicated by bars. *Source:* SCF 2013 and SOEP v30/v31, own calculations.

**Figure A2.** Exemplary household survival rates for Germany



**Figure A3.** Normalized age-wealth profiles



*Note:* Sample is top trimmed at 99.9 percent. All results based in multiple imputations. Dashed lines represent 95% confidence bands. *Source:* SCF 2013 and SOEP v30/v31, own calculations.

**Table A1.** Factor decomposition using the GE2 coefficient

Wealth aggregate	Components			Contribution	
	$\rho_f$	$s_f$	$GE(2)_f$	$C_f$	$c_f$
<b>United States</b>					
Net worth	0.961 (0.004)	0.517 (0.008)	8.209 (0.483)	2.500 (0.136)	80.96 (1.22)
Public pension wealth	0.397 (0.012)	0.248 (0.006)	0.346 (0.008)	0.102 (0.003)	3.29 (0.17)
Private pension wealth	0.610 (0.020)	0.235 (0.005)	3.712 (0.328)	0.486 (0.035)	15.74 (1.14)
Total inequality (augmented wealth)			3.088	3.088	100.00
<b>Germany</b>					
Net worth	0.884 (0.006)	0.410 (0.006)	2.245 (0.173)	0.455 (0.035)	64.90 (1.89)
Public pension wealth	0.627 (0.020)	0.492 (0.004)	0.481 (0.011)	0.179 (0.005)	25.58 (1.46)
Private pension wealth	0.489 (0.018)	0.098 (0.004)	2.785 (0.226)	0.067 (0.006)	9.52 (0.83)
Total inequality (augmented wealth)			0.700	0.700	100.00

*Note:* Sample is top trimmed at 99.9 percent. All results based in multiple imputations, bootstrap standard deviation accounting for multiple imputation in parentheses.

*Source:* SCF 2013 and SOEP v30/v31, own calculations.

GE(2) decomposition by  $f = 1, \dots, F$  factors:

$$GE(2) = \sum_{f=1}^F \rho_f \times s_f \sqrt{GE(2) \times GE(2)_f} = \sum_{f=1}^F C_f = \sum_{f=1}^F c_f \times GE(2)$$

Where  $GE(2)$  is half-squared coefficient of variation,  $\rho_f$  is the correlation between wealth component  $f$  and total wealth, and  $GE(2)_f$  is the coefficient of component  $f$  and  $s_f$  the share of component  $f$  on total wealth.  $C_f$  is the absolute contribution to overall inequality and  $c_f = \frac{C_f}{GE(2)}$  the relative contribution.

**Table A2a.** Gross wealth composition by age classes

Age class	Mean (US\$)	Share (%)				
	Gross overall wealth except retirement pension plans (W6)	Owner-occupied property (W1)	Other real estate (W2)	A Tangible assets (W3)	Business assets (W4)	Financial assets and building society savings agreements (W5)
<b>United States</b>						
Up to 34	114,558 (313,735)	52.22 (0.13)	7.83 (0.05)	0.34 (0.01)	18.80 (0.02)	20.80 (0.07)
35 to 44	365,274 (64,166)	45.51 (0.06)	8.15 (0.05)	0.56 (0.00)	27.56 (0.09)	18.22 (0.09)
45 to 54	438,077 (16,745)	42.84 (0.03)	12.73 (0.01)	0.67 (0.00)	22.49 (0.04)	21.27 (0.06)
55 to 64	619,005 (191,475)	35.09 (0.05)	15.11 (0.02)	0.73 (0.00)	20.01 (0.02)	29.05 (0.02)
65 to 74	716,559 (289,151)	34.94 (0.05)	16.41 (0.03)	1.55 (0.01)	12.99 (0.06)	34.10 (0.07)
75 and older	432,351 (16,868)	38.15 (0.02)	13.28 (0.02)	0.95 (0.00)	9.11 (0.10)	38.51 (0.11)
<b>Germany</b>						
Up to 34	48,633 (151,837)	40.81 (0.21)	9.73 (0.06)	0.77 (0.00)	18.96 (0.19)	29.73 (0.13)
35 to 44	162,224 (38,435)	63.77 (0.04)	11.53 (0.04)	0.34 (0.01)	8.74 (0.03)	15.62 (0.02)
45 to 54	214,726 (16,027)	61.65 (0.02)	16.63 (0.01)	0.59 (0.00)	7.79 (0.02)	13.35 (0.04)
55 to 64	242,646 (42,672)	60.04 (0.01)	15.86 (0.01)	1.04 (0.00)	6.91 (0.01)	16.14 (0.01)
65 to 74	285,323 (85,505)	57.02 (0.04)	18.61 (0.03)	1.90 (0.01)	2.95 (0.03)	19.52 (0.02)
75 and older	215,909 (16,379)	65.15 (0.05)	12.39 (0.03)	0.75 (0.00)	2.26 (0.04)	19.45 (0.02)

*Note:* Sample is top trimmed at 99.9 percent. All results based in multiple imputations, bootstrap standard deviation accounting for multiple imputation in parentheses. Age class refers to household head.

*Source:* SCF 2013 and SOEP v30/v31, own calculations.

**Table A2b.** Total debt composition by age classes

Age class	Mean (US\$)	Share (%)			Debt ratios	
	Total household debt	Mortgage debts - owner occupied property (W7)	Mortgage debts - other real estate (W8)	Consumer debts (W9)	Total debt/household income	Total debt/net worth
<b>United States</b>						
up to 34	63,648 (3,496)	63.94 (0.02)	4.74 (0.01)	31.32 (0.02)	15.90 (0.60)	1.25 (0.27)
35 to 44	128,613 (5,762)	76.70 (0.01)	7.07 (0.01)	16.23 (0.01)	15.34 (0.71)	0.54 (0.06)
45 to 54	123,691 (5,585)	76.24 (0.02)	10.37 (0.02)	13.39 (0.01)	14.54 (0.76)	0.39 (0.03)
55 to 64	103,486 (5,026)	73.36 (0.02)	11.49 (0.01)	15.15 (0.02)	11.64 (0.72)	0.20 (0.02)
65 to 74	71,558 (5,557)	77.07 (0.02)	10.85 (0.02)	12.08 (0.01)	9.38 (0.70)	0.11 (0.01)
75 and older	22,702 (2,667)	72.87 (0.04)	9.25 (0.02)	17.88 (0.03)	5.88 (0.71)	0.06 (0.01)
<b>Germany</b>						
up to 34	19,158 (4,039)	54.46 (0.10)	24.52 (0.09)	21.01 (0.05)	4.67 (0.99)	0.68 (0.24)
35 to 44	64,212 (3,441)	76.10 (0.03)	14.39 (0.03)	9.50 (0.01)	10.52 (0.48)	0.66 (0.05)
45 to 54	59,909 (3,286)	63.04 (0.03)	22.36 (0.03)	14.59 (0.01)	9.45 (0.42)	0.39 (0.02)
55 to 64	43,799 (6,339)	52.14 (0.07)	28.57 (0.08)	19.29 (0.05)	7.79 (0.88)	0.22 (0.04)
65 to 74	17,809 (1,590)	44.78 (0.04)	45.30 (0.04)	9.92 (0.01)	4.75 (0.37)	0.07 (0.01)
75 and older	6,343 (0,912)	45.62 (0.06)	39.17 (0.07)	15.21 (0.03)	2.24 (0.28)	0.03 (0.01)

Note: Sample is top trimmed at 99.9 percent. All results based in multiple imputations, bootstrap standard deviation accounting for multiple imputation in parentheses. Age class refers to household head.

Source: SCF 2013 and SOEP v30/v31, own calculations.

**Table A2c.** Augmented wealth composition by age classes

Age class	Mean (US\$) Augmented wealth (W16)	Net worth except retirement pension plans (W10)	Public pension wealth (W11)	Share (%)		
				Civil servant pension wealth (Germany only) (W12)	Company pension wealth (W13)	Private pension insurance contracts (W14)
<b>United States</b>						
Up to 34	104,826 (9,003)	48.56 (0.04)	39.40 (0.03)	0.00 (0.00)	9.02 (0.01)	3.02 (0.01)
35 to 44	415,285 (26,835)	56.99 (0.02)	26.24 (0.02)	0.00 (0.00)	12.32 (0.01)	4.45 (0.00)
45 to 54	606,802 (26,624)	51.81 (0.02)	27.52 (0.01)	0.00 (0.00)	15.19 (0.01)	5.48 (0.01)
55 to 64	1,037,212 (43,038)	49.70 (0.02)	24.58 (0.01)	0.00 (0.00)	17.14 (0.01)	8.57 (0.01)
65 to 74	1,327,593 (70,876)	48.58 (0.02)	22.81 (0.01)	0.00 (0.00)	16.37 (0.01)	12.23 (0.01)
75 and older	687,660 (42,172)	59.57 (0.02)	19.75 (0.01)	0.00 (0.00)	11.72 (0.01)	8.96 (0.02)
<b>Germany</b>						
Up to 34	70,243 (10,370)	41.66 (0.09)	36.94 (0.05)	2.74 (0.01)	11.29 (0.03)	7.36 (0.02)
35 to 44	215,837 (9,265)	45.40 (0.02)	34.41 (0.02)	6.50 (0.01)	6.72 (0.01)	6.97 (0.01)
45 to 54	371,422 (10,567)	41.68 (0.02)	39.59 (0.01)	5.82 (0.01)	6.99 (0.01)	5.92 (0.00)
55 to 64	563,445 (15,524)	35.29 (0.01)	43.07 (0.01)	9.85 (0.01)	7.12 (0.01)	4.67 (0.00)
65 to 74	672,498 (13,637)	39.78 (0.01)	42.93 (0.01)	10.33 (0.01)	5.77 (0.00)	1.19 (0.00)
75 and older	433,013 (9,193)	48.40 (0.01)	39.97 (0.01)	6.94 (0.01)	4.03 (0.00)	0.66 (0.00)

*Note:* Sample is top trimmed at 99.9 percent. All results based in multiple imputations, bootstrap standard deviation accounting for multiple imputation in parentheses. Age class refers to household head.

*Source:* SCF 2013 and SOEP v30/v31, own calculations.



**Table A3a. Gross wealth composition by wealth classes**

Wealth classes	Mean (US\$) Gross overall wealth except retirement pension plans (W6)	Share of gross wealth (%)				
		Owner-occupied property (W1)	Other real estate (W2)	A Tangible assets (W3)	Business assets (W4)	Financial assets and building society savings agreements (W5)
<b>United States</b>						
1 <sup>st</sup> quintile	27,708 (2,260)	80.54 (0.03)	4.76 (0.02)	0.84 (0.00)	2.20 (0.01)	11.67 (0.01)
2 <sup>nd</sup> quintile	74,067 (3,298)	83.29 (0.01)	5.08 (0.01)	0.43 (0.00)	1.95 (0.00)	9.25 (0.01)
3 <sup>rd</sup> quintile	140,523 (4,262)	80.17 (0.01)	5.88 (0.01)	0.74 (0.00)	2.83 (0.01)	10.38 (0.01)
4 <sup>th</sup> quintile	248,911 (6,896)	72.50 (0.01)	8.82 (0.01)	0.74 (0.00)	4.20 (0.01)	13.73 (0.01)
5 <sup>th</sup> quintile	1,427,074 (44,000)	30.12 (0.01)	14.83 (0.01)	0.92 (0.00)	22.71 (0.01)	31.42 (0.01)
P80 – P95	451,030 (12,792)	57.69 (0.01)	12.09 (0.01)	0.59 (0.00)	7.95 (0.01)	21.69 (0.01)
P95 – P100	2,550,941 (86,355)	24.51 (0.01)	15.39 (0.01)	0.98 (0.00)	25.71 (0.01)	33.40 (0.01)
<b>Germany</b>						
1 <sup>st</sup> quintile	12,747 (1,760)	41.25 (0.06)	14.42 (0.05)	1.48 (0.00)	6.78 (0.02)	36.07 (0.05)
2 <sup>nd</sup> quintile	45,287 (3,451)	63.32 (0.03)	7.17 (0.02)	0.56 (0.00)	2.86 (0.01)	26.09 (0.02)
3 <sup>rd</sup> quintile	105,487 (4,447)	68.90 (0.02)	8.58 (0.01)	0.55 (0.00)	3.00 (0.01)	18.97 (0.01)
4 <sup>th</sup> quintile	208,995 (5,193)	71.66 (0.01)	9.17 (0.01)	0.73 (0.00)	2.03 (0.00)	16.41 (0.01)
5 <sup>th</sup> quintile	628,475 (13,754)	55.25 (0.01)	19.17 (0.01)	1.19 (0.00)	8.10 (0.01)	16.28 (0.01)
P80 – P95	433,133 (7,525)	66.84 (0.01)	12.77 (0.01)	0.91 (0.00)	3.46 (0.01)	16.01 (0.01)
P95 – P100	1,213,620 (46,537)	42.87 (0.02)	26.02 (0.02)	1.48 (0.00)	13.05 (0.02)	16.57 (0.01)

Note: Sample is top trimmed at 99.9 percent. All results based in multiple imputations, bootstrap standard deviation accounting for multiple imputation in parentheses. Wealth classes. Source: SCF 2013 and SOEP v30/v31, own calculations.

**Table A3b.** Total debt composition by wealth classes

Wealth classes	Mean (US\$) Total household debt	Share of total household debt (%)			Debt ratios	
		Mortgage debts - owner occupied property (W7)	Mortgage debts - other real estate (W8)	Consumer debts (W9)	Total debt/ household income	Total debt/ net worth
<b>United States</b>						
1 <sup>st</sup> quintile	45,555 (3,505)	47.68 (0.03)	2.74 (0.02)	49.58 (0.03)	16.79 (1.12)	-2.55 (0.19)
2 <sup>nd</sup> quintile	60,339 (3,298)	75.50 (0.02)	3.68 (0.01)	20.82 (0.01)	16.42 (0.64)	4.40 (0.53)
3 <sup>rd</sup> quintile	76,502 (3,550)	78.43 (0.02)	4.60 (0.01)	16.97 (0.01)	16.55 (0.62)	1.20 (0.09)
4 <sup>th</sup> quintile	97,302 (5,066)	81.04 (0.01)	5.88 (0.01)	13.08 (0.01)	17.06 (0.70)	0.64 (0.04)
5 <sup>th</sup> quintile	165,212 (6,578)	75.87 (0.01)	14.94 (0.01)	9.19 (0.01)	10.06 (0.41)	0.13 (0.01)
P80 –	118,122	79.88	8.74	11.38	15.21	0.35
P95	(6,671)	(0.01)	(0.01)	(0.01)	(0.66)	(0.02)
P95 –	219,437	73.39	18.78	7.83	8.34	0.09
P100	(11,282)	(0.02)	(0.02)	(0.01)	(0.47)	(0.01)
<b>Germany</b>						
1 <sup>st</sup> quintile	21,022 (6,827)	27.73 (0.11)	31.73 (0.18)	40.54 (0.11)	6.68 (1.52)	-2.94 (5.77)
2 <sup>nd</sup> quintile	25,774 (2,866)	74.17 (0.05)	10.50 (0.04)	15.34 (0.02)	6.43 (0.66)	1.32 (0.15)
3 <sup>rd</sup> quintile	34,104 (2,782)	72.06 (0.02)	12.83 (0.03)	15.10 (0.02)	7.74 (0.47)	0.48 (0.03)
4 <sup>th</sup> quintile	40,545 (2,426)	74.16 (0.03)	15.75 (0.02)	10.09 (0.01)	8.03 (0.40)	0.24 (0.01)
5 <sup>th</sup> quintile	59,974 (3,629)	53.23 (0.03)	38.99 (0.03)	7.78 (0.01)	7.77 (0.40)	0.11 (0.01)
P80 –	50,868	64.32	26.56	9.12	7.63	0.13
P95	(3,062)	(0.03)	(0.03)	(0.02)	(0.39)	(0.01)
P95 –	87,251	33.84	60.70	5.46	8.07	0.08
P100	(10,216)	(0.04)	(0.04)	(0.01)	(0.86)	(0.01)

*Note:* Sample is top trimmed at 99.9 percent. All results based in multiple imputations, bootstrap standard deviation accounting for multiple imputation in parentheses. Wealth classes refer to augmented wealth. *Source:* SCF 2013 and SOEP v30/v31, own calculations.

**Table A3c.** Augmented wealth composition by wealth classes

Wealth classes	Mean (US\$) Augmented wealth (W16)	Share of augmented wealth (%)				
		Net worth except retirement pension plans (W10)	Public pension wealth (W11)	Civil servant pension wealth (Germany only) (W12)	Company pension wealth (W13)	Private pension insurance contracts (W14)
<b>United States</b>						
1 <sup>st</sup> quintile	22,477 (1,919)	-79.46 (0.16)	166.11 (0.15)	0.00 (0.00)	10.50 (0.02)	2.85 (0.01)
2 <sup>nd</sup> quintile	125,601 (2,137)	10.93 (0.01)	79.39 (0.01)	0.00 (0.00)	8.26 (0.01)	1.43 (0.00)
3 <sup>rd</sup> quintile	267,976 (3,078)	23.89 (0.01)	59.41 (0.01)	0.00 (0.00)	14.24 (0.01)	2.46 (0.00)
4 <sup>th</sup> quintile	476,636 (6,450)	31.81 (0.01)	44.53 (0.01)	0.00 (0.00)	19.36 (0.01)	4.31 (0.00)
5 <sup>th</sup> quintile	2,081,310 (49,490)	60.63 (0.01)	14.38 (0.00)	0.00 (0.00)	15.05 (0.01)	9.94 (0.01)
P80 – P95	868,856 (9,646)	38.32 (0.01)	31.79 (0.01)	0.00 (0.00)	23.12 (0.01)	6.77 (0.00)
P95 – P100	3,477,364 (95,869)	67.05 (0.01)	9.37 (0.00)	0.00 (0.00)	12.73 (0.01)	10.85 (0.01)
<b>Germany</b>						
1 <sup>st</sup> quintile	23,632 (4,921)	-37.48 (0.53)	112.14 (0.40)	5.65 (0.05)	8.42 (0.04)	11.27 (0.05)
2 <sup>nd</sup> quintile	130,587 (2,171)	14.94 (0.01)	72.63 (0.01)	2.12 (0.00)	5.32 (0.01)	4.99 (0.01)
3 <sup>rd</sup> quintile	270,315 (2,232)	26.41 (0.01)	61.29 (0.01)	3.17 (0.00)	5.20 (0.00)	3.94 (0.00)
4 <sup>th</sup> quintile	474,230 (4,915)	35.52 (0.01)	51.01 (0.01)	4.42 (0.00)	5.77 (0.00)	3.28 (0.00)
5 <sup>th</sup> quintile	1,100,368 (14,582)	51.66 (0.01)	26.45 (0.01)	11.95 (0.01)	6.80 (0.00)	3.13 (0.00)
P80 – P95	851,650 (6,827)	44.88 (0.01)	34.31 (0.01)	11.15 (0.01)	6.35 (0.00)	3.31 (0.00)
P95 – P100	1,845,400 (40,245)	61.03 (0.01)	15.59 (0.01)	13.07 (0.01)	7.43 (0.01)	2.88 (0.00)

*Note:* Sample is top trimmed at 99.9 percent. All results based in multiple imputations, bootstrap standard deviation accounting for multiple imputation in parentheses. Wealth classes refer to augmented wealth. *Source:* SCF 2013 and SOEP v30/v31, own calculations.

**Table A4a. Gross wealth composition by income classes**

Income class	Mean (US\$) Gross overall wealth except retirement pension plans (W6)	Share of gross wealth (%)				
		Owner-occupied property (W1)	Other real estate (W2)	A Tangible assets (W3)	Business assets (W4)	Financial assets and building society savings agreements (W5)
<b>United States</b>						
1 <sup>st</sup> quintile	23,507 (4,313)	77.99 (0.06)	2.31 (0.02)	0.90 (0.00)	7.87 (0.06)	10.93 (0.03)
2 <sup>nd</sup> quintile	2,262 (3,221)	14.38 (0.40)	8.61 (0.12)	0.00 (0.00)	0.00 (0.00)	77.01 (0.41)
3 <sup>rd</sup> quintile	3,378 (4,128)	22.45 (0.35)	14.10 (0.19)	0.00 (0.00)	0.00 (0.00)	63.45 (0.32)
4 <sup>th</sup> quintile	5,333 (4,186)	45.72 (0.35)	10.82 (0.22)	1.55 (0.02)	0.00 (0.00)	41.91 (0.37)
5 <sup>th</sup> quintile	456,543 (13,011)	39.33 (0.01)	13.31 (0.01)	0.87 (0.00)	18.90 (0.01)	27.59 (0.01)
P80 –	9,725	68.94	2.16	1.62	0.82	26.46
P95	(6,354)	(0.24)	(0.07)	(0.02)	(0.01)	(0.23)
P95 –	462,091	39.32	13.32	0.87	18.90	27.59
P100	(13,187)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)
<b>Germany</b>						
1 <sup>st</sup> quintile	23,717 (11,490)	50.14 (0.12)	32.79 (0.12)	0.17 (0.00)	6.29 (0.05)	10.61 (0.05)
2 <sup>nd</sup> quintile	2,885 (3,815)	8.28 (0.23)	15.81 (0.39)	0.00 (0.00)	20.98 (0.26)	54.93 (0.35)
3 <sup>rd</sup> quintile	4,524 (4,177)	0.00 (0.00)	0.00 (0.00)	0.15 (0.00)	31.62 (0.48)	68.23 (0.48)
4 <sup>th</sup> quintile	6,973 (7,358)	16.39 (0.31)	6.74 (0.13)	7.61 (0.16)	21.05 (0.28)	48.21 (0.28)
5 <sup>th</sup> quintile	208,542 (4,164)	60.35 (0.01)	15.31 (0.01)	1.00 (0.00)	6.03 (0.01)	17.30 (0.01)
P80 –	7,293	29.79	5.68	0.34	11.45	52.74
P95	(4,570)	(0.31)	(0.07)	(0.00)	(0.19)	(0.28)
P95 –	210,800	60.36	15.31	1.00	6.03	17.29
P100	(4,280)	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)

Note: Sample is top trimmed at 99.9 percent. All results based in multiple imputations, bootstrap standard deviation accounting for multiple imputation in parentheses. Income classes refer to monthly gross household income. Source: SCF 2013 and SOEP v30/v31, own calculations.

**Table A4b.** Total debt composition by income classes

Income class	Mean (US\$) Total household debt	Share of total household debt (%)			Debt ratios	
		Mortgage debts - owner occupied property (W7)	Mortgage debts - other real estate (W8)	Consumer debts (W9)	Total debt/ household income	Total debt/ net worth
<b>United States</b>						
1 <sup>st</sup> quintile	76,583 (10,694)	31.25 (0.06)	0.31 (0.00)	68.44 (0.06)	31.78 (3.93)	-1.44 (0.15)
2 <sup>nd</sup> quintile	14,216 (9,170)	5.11 (0.15)	0.25 (0.01)	94.64 (0.15)	8.91 (3.97)	-1.20 (4.90)
3 <sup>rd</sup> quintile	13,960 (6,171)	7.05 (0.19)	1.06 (0.01)	91.89 (0.19)	8.06 (2.74)	-1.35 (0.28)
4 <sup>th</sup> quintile	11,102 (6,684)	10.42 (0.17)	5.72 (0.12)	83.86 (0.20)	5.74 (2.78)	-1.89 (1.81)
5 <sup>th</sup> quintile	92,833 (2,318)	76.01 (0.01)	9.41 (0.01)	14.58 (0.00)	12.63 (0.31)	0.26 (0.01)
P80 –	16,523	35.03	1.12	63.85	7.89	-2.44
P95	(8,944)	(0.18)	(0.04)	(0.18)	(3.14)	(1.10)
P95 –	93,780	76.10	9.42	14.48	12.65	0.25
P100	(2,345)	(0.01)	(0.01)	(0.00)	(0.31)	(0.01)
<b>Germany</b>						
1 <sup>st</sup> quintile	84,252 (45,846)	15.88 (0.08)	43.32 (0.22)	40.80 (0.19)	29.35 (10.56)	-1.42 (0.24)
2 <sup>nd</sup> quintile	4,673 (4,823)	6.98 (0.20)	14.53 (0.36)	78.48 (0.37)	2.00 (1.23)	-2.86 (8.39)
3 <sup>rd</sup> quintile	3,783 (4,584)	0.00 (0.00)	0.00 (0.00)	100.00 (0.00)	1.69 (1.06)	-3.45 (162.46)
4 <sup>th</sup> quintile	8,812 (9,188)	12.57 (0.00)	9.21 (0.00)	78.22 (0.00)	3.72 (2.06)	1.59 (126.71)
5 <sup>th</sup> quintile	35,228 (1,132)	64.87 (0.02)	22.55 (0.02)	12.58 (0.01)	7.09 (0.20)	0.20 (0.01)
P80 –	7,858	24.75	23.72	51.53	2.90	16.33
P95	(6,243)	(0.26)	(0.30)	(0.47)	(1.84)	(52.48)
P95 –	35,539	64.95	22.54	12.51	7.12	0.20
P100	(1,168)	(0.02)	(0.02)	(0.01)	(0.20)	(0.01)

Note: Sample is top trimmed at 99.9 percent. All results based in multiple imputations, bootstrap standard deviation accounting for multiple imputation in parentheses. Income classes refer to monthly gross household income. Source: SCF 2013 and SOEP v30/v31, own calculations.

**Table A4c.** Augmented wealth composition by income classes

Income class	Mean (US\$) Augmented wealth (W16)	Share of augmented wealth (%)				
		Net worth except retirement pension plans (W10)	Public pension wealth (W11)	Civil servant pension wealth (Germany only) (W12)	Company pension wealth (W13)	Private pension insurance contracts (W14)
<b>United States</b>						
1 <sup>st</sup> quintile	-28,030 (6,354)	189.36 (0.21)	-80.14 (0.19)	0.00 (0.00)	-7.91 (0.03)	-1.32 (0.01)
2 <sup>nd</sup> quintile	2,520 (0,108)	-471.99 (3.12)	523.42 (2.91)	0.00 (0.00)	48.57 (0.54)	0.00 (0.00)
3 <sup>rd</sup> quintile	3,942 (0,083)	-268.54 (1.26)	363.54 (1.27)	0.00 (0.00)	4.71 (0.08)	0.29 (0.01)
4 <sup>th</sup> quintile	5,829 (0,144)	-99.17 (0.53)	180.17 (0.46)	0.00 (0.00)	17.65 (0.09)	1.35 (0.04)
5 <sup>th</sup> quintile	699,413 (15,988)	52.00 (0.01)	24.53 (0.01)	0.00 (0.00)	15.12 (0.00)	8.35 (0.00)
P80 – P95	9,249 (0,224)	-73.26 (0.37)	158.07 (0.32)	0.00 (0.00)	13.01 (0.08)	2.18 (0.02)
P95 – P100	707,982 (16,214)	52.02 (0.01)	24.51 (0.01)	0.00 (0.00)	15.12 (0.00)	8.35 (0.00)
<b>Germany</b>						
1 <sup>st</sup> quintile	-43,541 (32,161)	144.46 (0.33)	-30.07 (0.27)	-6.89 (0.07)	-2.22 (0.02)	-5.28 (0.05)
2 <sup>nd</sup> quintile	2,586 (0,123)	-69.65 (0.95)	139.55 (0.98)	3.64 (0.03)	10.98 (0.13)	15.47 (0.11)
3 <sup>rd</sup> quintile	3,762 (0,111)	19.89 (0.26)	51.96 (0.22)	0.06 (0.00)	3.32 (0.05)	24.77 (0.20)
4 <sup>th</sup> quintile	5,927 (0,159)	-31.27 (0.59)	105.24 (0.60)	0.00 (0.00)	9.75 (0.13)	16.28 (0.11)
5 <sup>th</sup> quintile	419,363 (5,315)	41.33 (0.01)	40.77 (0.00)	8.21 (0.00)	6.23 (0.00)	3.46 (0.00)
P80 – P95	9,769 (0,254)	-5.84 (0.32)	86.06 (0.26)	1.35 (0.01)	7.02 (0.03)	11.42 (0.09)
P95 – P100	423,950 (5,470)	41.34 (0.01)	40.75 (0.00)	8.21 (0.00)	6.23 (0.00)	3.46 (0.00)

Note: Sample is top trimmed at 99.9 percent. All results based in multiple imputations, bootstrap standard deviation accounting for multiple imputation in parentheses. Income classes refer to monthly gross household income. Source: SCF 2013 and SOEP v30/v31, own calculations.