

# Methods for augmenting traditional wealth surveys by specific questions and data linkage: The German experience

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Introduction

SOEP's "My personal balance sheet"

SOEP about pension wealth

Selected results on wealth & augmented wealth (DE & US)

SOEP-RV – Linkage of SOEP with statutory pension insurance records

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# Introduction

- ▶ Income (flow) and wealth (stock) are the essential determinants of households' material well-being.
- ▶ Household wealth in a broader sense – augmented wealth – includes
  - ▶ net worth (current value of marketable assets minus debt)
  - ▶ social security wealth ((non-marketable) present values of the claims of the insured against the social insurance); here: pension wealth.

Presentation deals with SOEP data on (augmented) wealth, lifetime material resources, and some selected results.

## SOEP data on wealth and lifetime resources

- ▶ Gross wealth & net worth  
⇒ SOEP's "my personal balance sheet"
- ▶ Pension wealth  
⇒ SOEP's pensions items
- ▶ Lifetime resources  
⇒ Rec-Link with pension-insurance accounts "SOEP-RV"

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# SOEP's "My personal balance sheet"

## General overview

- ▶ Used in field: 2002(5)2017 and 2019 (next wave 2024)
- ▶ 8 types of assets & 4 types of debt
- ▶ When making the interview appointments, respondents are asked to have the relevant documents at hand.
- ▶ Accounting unit: individual  $\Rightarrow$  allows household-level agg.
  - ▶ Typical query for items that are usually in ...
    - ▶ common ownership: Are you the (co)owner of the apartment where you live? What is its value? What percentage do you own?
    - ▶ individual ownership: Do you own financial assets? What is the total value?
- ▶ Data is released in original and (later) in imputed/edited form

# SOEP's "My personal balance sheet"

## Asset components

- ▶ Owner-occupied housing
- ▶ Other real estate (incl. undeveloped property, holiday and weekend homes)
- ▶ Financial wealth (savings accounts, savings and mortgage bonds, shares and investment certificates)
- ▶ Assets from private insurance policies (life insurance and private pensions, including so-called Riester pension plans)
- ▶ Building loan balance
- ▶ Business assets (solely- or co-owned business partnerships or corporations; after deduction of operating liabilities)
- ▶ Tangible property (gold, jewelry, coins, or art)
- ▶ Value of motor vehicles



# SOEP's "My personal balance sheet"

## Debt components

- ▶ Mortgages on owner-occupied housing
- ▶ Mortgages on other real estate
- ▶ Consumer debt
- ▶ Remaining student loan debt

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# SOEP about pension wealth

## General overview

- ▶ Pension types: social security and civil servant pensions (personal entitlements & survivor benefits), occupational pensions, value of private pension insurances
- ▶ Accounting unit: individual
- ▶ Distinction between retired and non-retired respondents
  - ▶ R: What is the value of your current pension?
  - ▶ NR: How high are your entitlements acquired so far?

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# Selected results on wealth & augmented wealth (DE & US)

1. How much does pension wealth add to net worth?
2. Does the inclusion of pension wealth reduce wealth inequalities?

## Reference

T Bönke, MM Grabka, C Schröder, EN Wolff (2020): A Head-to-Head Comparison of Augmented Wealth in Germany and the United States, *The Scandinavian Journal of Economics*, 122(3), 1140-1180

# How much does pension wealth add to net worth?

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

Wealth aggregate	Mean (SE)	P25	P50	P75	Fraction > 0 (SE)
<b>United States</b>					
Net worth	336,636 (5,765)	0	40,000	198,510	73.07 (0.28)
Social security pension wealth	161,475 (906)	64,486	124,938	227,458	96.49 (0.13)
- own entitlements	149,263 (837)	59,428	117,243	211,562	96.49 (0.13)
- survivor benefit	12,212 (112)	0	3,471	18,960	56.29 (0.33)
Occupational and private pension wealth	153,351 (2,310)	0	13,000	139,877	61.69 (0.32)
Augmented wealth	651,462 (7,450)	85,989	246,531	607,288	95.75 (0.13)
<b>Germany</b>					
Net worth	182,513 (2,684)	0	49,623	231,139	71.56 (0.22)
Social security pension wealth	200,407 (957)	68,257	162,540	295,027	93.08 (0.14)
- own entitlements	178,555 (894)	57,508	141,150	264,181	92.78 (0.14)
- survivor benefit	21,853 (270)	0	0	19,569	27.48 (0.22)
Occupational and private pension wealth	90,122 (1,093)	0	13,059	78,801	64.20 (0.24)
Augmented wealth	473,043 (2,997)	149,128	326,525	631,883	98.30 (0.07)

Note: The sample is top-trimmed at the 99.9th percentile. All results are based on multiple imputations; bootstrap standard errors accounting for multiple imputations are shown in parentheses. Nonlinear estimates (P25, p50, P75) are based on first imputation only. Source: authors' calculations from the SCF 2013 and SOEP v30/v31.

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**Average net wealth is 1.8 times higher in the US.**

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**Adding pension wealth means a doubling in the U.S. and a 2.6-fold increase in Germany.**



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**Compared to U.S. Americans, the bottom 75% of Germans own more wealth.**

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**Only the portfolios of households with higher wealth include significant occupational pensions and survivors' pensions.**

# Does the inclusion of pension wealth reduce inequalities?

## Gini decomposition by wealth factors (Lerman and Yitzhaki, 1985):

$$Gini = \sum_{f=1}^F r_f \times Gini_f \times s_f \equiv \sum_{f=1}^F C_f \times s_f \equiv \sum_{f=1}^F O_f \quad (1)$$

1. *Gini*: Gini index of augmented wealth
2.  $r_f$ : Gini correlation between wealth factor  $f$  and augmented wealth.<sup>1</sup>
3.  $s_f$ : the share of factor  $f$  in augmented wealth
4.  $C_f = r_f Gini_f$ : concentration coefficient of factor  $f$

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<sup>1</sup>Suppose we have distributions  $F_X$  and  $F_Y$  for variables  $X$  and  $Y$ . The Gini correlation is  $r(X, Y) = Cov(X, F_Y(Y)) / Cov(X, F_X(X))$ .

# Does the inclusion of pension wealth reduce inequalities?

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

Wealth aggregate	Components				Contribution		$\Delta \hat{G}_k$
	$r_{f,k}$	$s_{f,k}$	$Gini_{f,k}$	$C_{f,k}$	$O_{f,k}$ (absolute)	$\sigma_{f,k}$ (relative, %)	
<b>United States</b>							
Net worth	0.960 (0.039)	0.517 (0.009)	0.892 (0.165)	0.856 (0.159)	0.442 (0.083)	63.12 (1.25)	0.114 (0.008)
Social security pension wealth without survivor benefit	0.784 (0.020)	0.229 (0.005)	0.440 (0.081)	0.345 (0.064)	0.079 (0.015)	11.27 (0.52)	-0.116 (0.003)
Social security pension wealth from survivor benefit	0.573 (0.023)	0.019 (0.000)	0.691 (0.127)	0.396 (0.074)	0.007 (0.001)	1.06 (0.05)	-0.008 (0.000)
Occupational and private pension wealth	0.901 (0.039)	0.235 (0.006)	0.811 (0.151)	0.731 (0.138)	0.172 (0.033)	24.55 (0.98)	0.010 (0.007)
Total inequality (augmented wealth)			0.701	0.701	0.701	100.00	0.00
<b>Germany</b>							
Net worth	0.900 (0.034)	0.386 (0.008)	0.765 (0.122)	0.688 (0.112)	0.265 (0.044)	51.93 (1.52)	0.133 (0.010)
Social security pension wealth without survivor benefit	0.646 (0.016)	0.377 (0.006)	0.466 (0.070)	0.301 (0.045)	0.114 (0.017)	22.22 (0.90)	-0.155 (0.007)
Social security pension wealth from survivor benefit	0.365 (0.024)	0.046 (0.001)	0.836 (0.128)	0.305 (0.048)	0.014 (0.002)	2.76 (0.20)	-0.019 (0.002)
Occupational and private pension wealth	0.778 (0.028)	0.191 (0.005)	0.797 (0.128)	0.620 (0.099)	0.118 (0.019)	23.09 (1.11)	0.040 (0.008)
Total inequality (augmented wealth)			0.511	0.511	0.511	100.00	0.00

Note: The sample is top-trimmed at the 99.9 percentile. All results are based on multiple imputations; bootstrap standard errors accounting for multiple imputation are shown in parentheses.

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Source: authors' calculations from the SCF 2013 and SOEP v30/v31.

**Considering pension wealth reduces the Gini from 0.89 to 0.70 in US; from 0.77 to 0.51 in Germany.**

## Broader perspective

1. We would have expected the wider social safety net and low cost access to universities in Germany relative to the US would imply that middle-class and poor Germans save less for job loss, sickness, old age, and children's education than corresponding Americans.
2. However, net worth is higher in Germany than in the US up to the eighth decile. Future research is needed in this respect.
3. Cross-country comparisons of wealth are sensitive to the choice of the wealth aggregate, and AW may give a more accurate picture of the welfare positions of households in different countries than net worth.<sup>2</sup>

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<sup>2</sup>Notice the restricted convertibility of social security wealth in standard wealth components.

# Further research # 1

## Reference

T Bönke, MM Grabka, C Schröder, EN Wolff, L Zyska (2019): The joint distribution of net worth and pension wealth in Germany, *Review of Income and Wealth*, 65 (4), 834-871

## Main findings:

1. Sizeable regional divide in wealth levels: For example, at age 40, East Germans hold 65% of the average augmented wealth of their West German counterparts.
2. Aggregates of self-reported pension entitlements are very similar to official aggregates provided by Germany's statutory pension insurance.

## Further research # 2

### Reference

C Bartels, T Bönke, R Glaubitz, MM Grabka, C Schröder (2023): Accounting for pension wealth, the missing rich and under-coverage: A comprehensive wealth distribution for Germany, in preparation.

### Main findings:

1. In international perspective, Germany's wealth-income ratio is high (around 570%; similar to US). Including pension wealth rises ratio to 850% in 2017.
2. Between 2012 and 2017, the house price boom in Germany leads to a remarkable expansion of real estate wealth; importance of other asset types remains stable.



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# Motivation

- ▶ The **SOEP** collects comprehensive information about many life domains at individual and household level. Unfortunately, because of panel attrition, biographies are incomplete.
- ▶ The **German Pension Insurance** provides complete insurant biographies. Unfortunately, the information is individual level only and focusing on a single life domain, insurance.

⇒ The record-linked **SOEP-RV dataset** combines the strengths of both datasets.

## Being asked for consent and consenting population

- ▶ In total, 24,452 subjects were asked for consent since 2018.
- ▶ 15,501 subjects consented.

... and soon there will be more linked cases.

# Research potentials

- ▶ Research on pension
- ▶ Research beyond pensions

# Research potentials

## **Realm of pension economics**

- ▶ Complementation of individual with household level perspective
- ▶ Complementation social security with survey information
- ▶ Complementation of biographies and coverage of overall population

## Realm of pension economics

- ▶ Complementation of individual with household level perspective
  - ▶ What is the sum of pension entitlements across all household members?  $\Rightarrow$  Old-age poverty.
  - ▶ How are the retirement decisions of (married) partners related?

## Realm of pension economics

- ▶ Complementation social security with survey information:
  - ▶ What is the sum of all income in old age, i.e. social security pensions, company and private pension plans, and other income (e.g. capital income or income from renting and leasing)?  
⇒ Importance of all pension pillars & other income sources.
  - ▶ How do health status, material situation, and care correlate in old age?  
⇒ Inter-disciplinary research.
  - ▶ How do inheritances contribute to wellbeing in retirement?  
⇒ Complete picture of all material resources.

## Realm of pension economics

- ▶ Complementation of biographies and coverage of overall population:
  - ▶ What did people actually do during periods when they were unobserved in the insurance data (moving from dependent employment to self-employment)?
  - ▶ How do retired from soc.sec. compare with retired self-employed and civil servants?



## **Beyond the realm of pension economics**

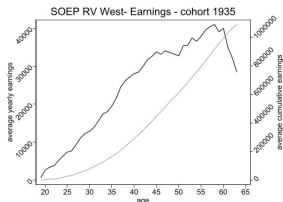
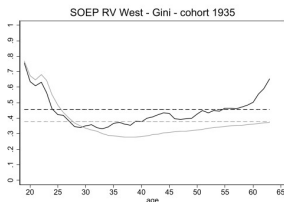
- ▶ How are labor supply, saving, consumption, or fertility decisions related over the life cycle?
- ▶ To what extent do characteristics of the partner or parents play a role (intergenerational transmission)?
- ▶ To what extent do cross-sectional measures of inequality reflect inequalities across the life cycle?

# Lifetime earnings

The earnings distribution (extent of inequality and level) is described from different perspectives to study **life-cycle dynamics**.

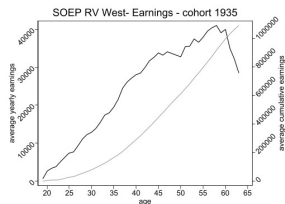
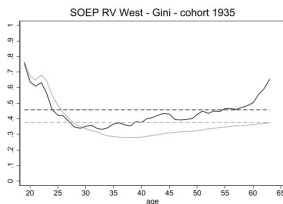
- ▶ **Accounting period:** cross-sectional **annual** vs. **cumulative up to age x** earnings
- ▶ **Reference unit:** **Individual** vs. **household** level

# Yearly vs. cumulative earnings - Preliminary results



**Panel left:** Black line: Gini of yearly earnings, grey line: Gini of cumulative earnings **Panel right:** Black line: average yearly earnings, grey line: average cumulative earnings.

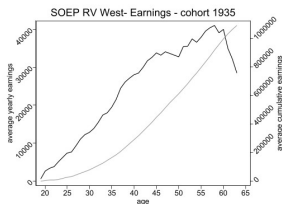
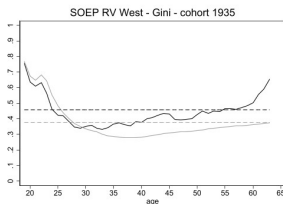
# Yearly vs. cumulative earnings - Preliminary results



**Panel left:** Black line: Gini of yearly earnings, grey line: Gini of cumulative earnings **Panel right:** Black line: average yearly earnings, grey line: average cumulative earnings.

**U-shaped inequality pattern in age. Individual lifetime gross earnings in 2018 prices amount to about 1,100,000 euros.**

# Yearly vs. cumulative earnings - Preliminary results



**Panel left:** Black line: Gini of yearly earnings, grey line: Gini of cumulative earnings **Panel right:** Black line: average yearly earnings, grey line: average cumulative earnings.

**Inequality of cumulative earnings tends to be lower than inequality of yearly earnings (possible reasons: career mobility, heterogeneous education choices).**

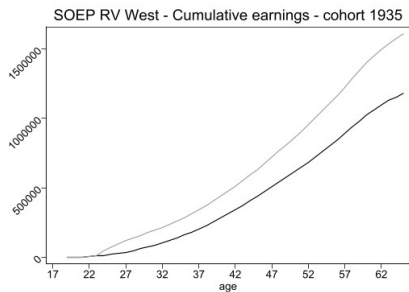
# Switching from Individual to Household Level

People living in household units can pool resources: How do results change if we switch from individual to household perspective?

- ▶ HH-level perspective cannot be studied with RV data alone as it lacks household context.
- ▶ HH-level perspective cannot be studied with SOEP data alone as it frequently provides incomplete biographies only.

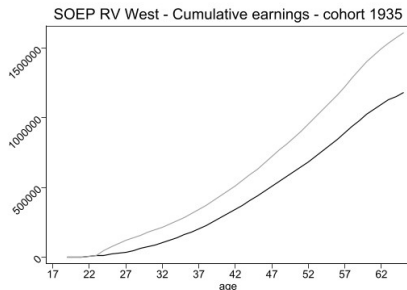
⇒ Here we benefit from the comparative strengths of the linked datasets.

# Individual vs household earnings - Preliminary results



Black line: male individual cumulative earnings, grey line: cumulative household earnings male perspective.

# Individual vs household earnings - Preliminary results

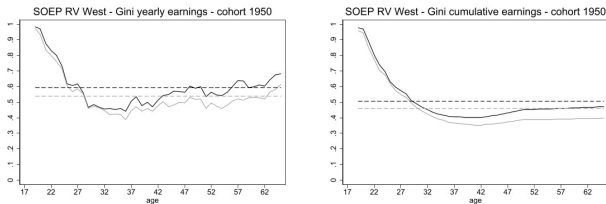


Black line: male individual cumulative earnings, grey line: cumulative household earnings male perspective.

**From the viewpoint of the male partner, switching to the household perspective increases lifetime earnings by approx. 500,000 euros.**

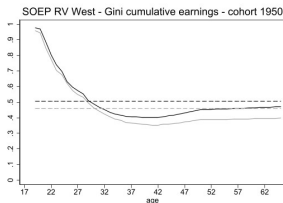
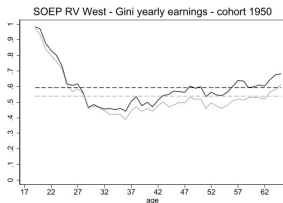


# Individual vs household earnings - Preliminary results



**Panel left:** Black line: Gini of individual yearly earnings, grey line: Gini of hh yearly earnings **Panel right:** Black dotted line: Gini of individual cumulative earnings, grey dotted line: Gini of hh cumulative earnings

# Individual vs household earnings - Preliminary results



**Panel left:** Black line: Gini of individual yearly earnings, grey line: Gini of hh yearly earnings **Panel right:** Black dotted line: Gini of individual cumulative earnings, grey dotted line: Gini of hh cumulative earnings

**Inequality of household is consistently lower than of individual earnings, both when considering yearly and cumulative earnings.**

# Conclusion

To get a complete picture of material inequalities in a country, you need a good understanding of ...

- ▶ how unequally (augmented) wealth and (lifetime) income (post-tax transfers) are distributed
- ▶ the determinants of inequality: Is it IOp (e.g., inheritances), effort (ineq. in working hours), or heterogeneous preferences (e.g., risk attitudes, time preferences)?

... and hence very comprehensive data *and* testable theoretical models.

Introduction

SOEP's "My personal balance sheet"

SOEP about pension wealth

Selected results on wealth & augmented wealth (DE & US)

SOEP-RV – Linkage of SOEP with statutory pension insurance records

**Appendix**

# Distribution by deciles of net worth

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

Decile	Mean (US\$)				As share of augmented wealth (%)		
	Net worth	Social security pension wealth	Occupational and private pension wealth	Augmented wealth	Net worth	Social security pension wealth	Occupational and private pension wealth
<b>United States</b>							
1	-60,954	112,379	45,883	97,308	-62.67	115.53	47.14
2	-9,997	100,096	28,520	118,619	-8.43	84.39	24.04
3	-516	92,035	12,737	104,256	-0.49	88.28	12.22
4	3,035	98,472	22,186	123,692	2.45	79.64	17.91
5	22,883	132,898	64,196	219,977	10.40	60.42	29.17
6	60,104	158,896	96,468	315,468	19.05	50.37	30.57
7	112,479	188,895	140,949	442,323	25.43	42.70	31.87
8	201,757	210,075	183,052	594,884	33.92	35.31	30.77
9	403,636	237,304	312,338	953,278	42.34	24.89	32.76
10	2,636,165	284,046	627,947	3,548,157	74.30	8.01	17.70
Overall	336,636	161,475	153,351	651,462	51.67	24.79	23.54
<b>Germany</b>							
1	-31,291	147,661	40,163	156,533	-20.04	94.38	25.65
2	-7	158,944	16,703	175,639	0.00	90.49	9.51
3	615	131,391	14,884	146,891	0.42	89.46	10.12
4	6,811	157,608	39,624	204,044	3.34	77.25	19.41
5	28,402	193,367	56,957	278,726	10.19	69.39	20.42
6	76,178	196,928	66,528	339,634	22.43	57.99	19.58
7	143,243	219,349	112,603	475,195	30.15	46.16	23.69
8	233,897	250,398	120,879	605,174	38.65	41.38	19.97
9	365,569	274,895	182,926	823,390	44.40	33.39	22.21
10	1,007,194	254,042	250,733	1,511,968	66.61	16.81	16.59
Overall	182,513	200,407	90,122	473,043	38.58	42.37	19.05

Note: The sample is top trimmed at the 99.9th percentile. All results are based on multiple imputations. Deciles refer to the distribution of net worth. Source: authors' calculations from the SCF 2013 and SOEP v30/v31.

# Being asked for consent and consenting population

## Base population

- ▶ In 2018, subsamples A-L1, N have been asked for consent.
- ▶ In 2019, SOEP-IS has been asked for consent.
- ▶ In 2020, A1-L3, N, O, M1/2 have been asked for consent.
- ▶ In 2022: refusers A-L3, N, O, and M1/2 plus M7/M8, P and Q

## The accounting period & the “Shorrocks effect”

Shorrocks (1978) has shown under quite general conditions that inequality and the accounting period of income are negatively related.<sup>3</sup> This is because of mobility and, thus, the correlation between incomes over time typically being lower than one.

**Example.** suppose we observe a population of two subjects over two periods. The two-period income stream is (4, 11) for the first subject and (11, 4) for the second. Any inequality index that satisfies the weak principle of transfers will indicate more inequality in the period-specific distributions, than in the two-period distribution, (15, 15).

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<sup>3</sup>Shorrocks, A. F. (1978). Income inequality and income mobility. *Journal of Economic Theory*, 19, 376-393.

# Household definition

- ▶ We focus on **two-individual-households** (couples) where both individuals agreed to linkage
- ▶ We assume **partners in 2018** to be lifetime partners, and calculate their household yearly earnings and hypothetical household cumulative earnings (required assumption: individuals are able to transfer all their cumulative earnings to the household they currently live in)
- ▶ We define **household cohorts** based on the year of birth of the male partner. Then, we compare inequality of individual earnings of the base population (e.g., men, born in 1935) with inequality of household earnings computed on the part of the same base population living in a two-individual household