Economic and Finance statistics

Surveys – the distribution of wealth

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Pleased to meet you…

- My name is Ulf von Kalckreuth, from DG Statistics of the Deutsche Bundesbank

- I am Economist-Statistician, with a strong background in research

- IN 2008 - 2012, I co-ordinated the Panel of Household Finance (PHF) in the Research Centre of the Bank

- By the way, I also helped to organize this course… ☺

- I live in Frankfurt, Germany, with my wife and two kids.

Aggregates and distributions

- Much of what we did in this course was „from the micro level information to the aggregates"

- (Multidimensional) distributions may in itself be extremely interesting for economic policy

- Using granular information from aggregate statistics is often not possible. Eg wealth – there is no household level mandatory reporting system on wealth

- Potential data sources are administrative data (eg tax records) and surveys -- asking people, mandatory or non-mandatory

- Wealth surveys allow the estimation of aggregates – and in turn can be used for disaggregation

Survey data on income and wealth

Income

EU SILC, a harmonised survey on income, labour and consumption, co-ordinated by Eurostat and run by NSIs. German component is called „Leben in Europa"

Why not „Leben in Deutschland ☺"?

Wealth

Household Finance and Consumption Survey (HFCN), harmonised survey on wealth, co-ordinated by ECB and run by NCBs. German component „Panel on Household Finance" (PHF)

In Germany, other important national survey data sources on both income and wealth are:
- Einkommens- und Verbrauchsstichprobe (EVS), run by Destatis
- Socio-Economic Panel (SOEP), run by DIW, a research institute

PHF – a data base on household finances

PHF – a data base on household finances

The PHF…

… is integral component of the survey on household finances in the Eurosystem (HFCS)

… is a self contained and partly independent scientific data base on the financial situation of private households in Germany

PHF…

… means two things: „**Private Haushalte und ihre Finanzen**" and „**Panel on Household Finance**"

... is a **survey** on **private households** in **Germany**, conducted on a regular basis by the **Deutsche Bundesbank**

… was in the field in **2017** for the third time, after **2011** and **2014**

... yields detailed information on the **distribution of wealth,** the **composition of assets and liabilities and savings behavior**, together with a wealth of additional information

… is part of the surveys conducted by the European System of Central Banks (ESCB) on the wealth of private households, the „**Household Finance and Consumption Survey**" (HFCS)

EMOS core module on economic and finance statistics

Specific features

- A set of core questions is **harmonised within the HFCN**, other questions and modules are **specific to the PHF**

- Specific to the PHF is its focus on **savings behavior** as a key determinant of wealth distribution, together with the fact that it is a **panel study**

- All participating households will be recontacted each wave (unless they reject), at the same time the sample is refreshed each wave.

Questionnaire program

- Focus on **assets**, **liabilities**, as well as **savings and investment behaviour**

- Data on income, work, education and profession and consumption behaviour as important additional information

- PHF wealth does not include the value of pay-as-you-go pensions, the dominant pension type in Germany

- **Valuation done by households**

Balance sheet of a household – a schematic overview

Assets	Liabilities
Non-financial assets – Owner-occupied housing – Other real estate and property – Established businesses (net value) – Vehicles, collections, jewellery, etc.	**Liabilities** – Mortgages – Consumer credit (incl. credit card debt, current account credit, unpaid invoices, student loan debt) – Loans for business activity
Financial assets – Savings and current accounts, savings under building loan contracts – Mutual fund shares, assets under management, debt securities, shares, derivatives and certificates – Positive balances from private pension and life insurance policies – Long-term equity investment	**Net wealth**
Total assets	**Total assets**

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Questionnaire program

1. Socio-demographics
2. Consumption
3. Real estate and its financing
4. Unsecured debt and financial constraints
5. Believes, expectations, literacy
6. Business wealth, liquid assets, financial assets

7. Gifts and inheritances
8. Employment
9. Pensions: Public, Private and Occupational
10. Income
11. Savings and saving behavior

Questionnaire program

- It took years to develop the questionnaire program, from the first list of target variables up to the finished CAPI

- An example: asking about the effective interest rate for financing the household main residence

- Do not miss the chance to have a look at the questionnaire

```
Input filter hb1010>=1 AND less than 3 loop passes
```

3.25A   **dhb560$x**   **HMR MORTGAGES $X: EFFECTIVE INTEREST RATE**

Question: How high is the current annual effective interest rate that {you / your household / the household} {pay / pays} for this loan {<IF hb180$x=1 (adjustable rate interest)> as result of the last adjustment}?

INTERVIEWER: - You will find additional explanations on the "nominal and effective interest rate" on the help page.
- If the respondent knows only the nominal interest rate, please enter "Don't know" here. Enter information with a maximum of 3 decimal places.

Numeric entry in %,	*-1 - Don't know*	**If = -1 or -2, continue with**
5 digits, 3 decimal places	*-2 - No answer*	**DHB561$x,**
	-3 - Question filtered	**ELSE continue with DHB590$x**

Online-Glossar: The nominal interest rate determines the amount of the monthly or quarterly interest payment.

```
Input filter dhb560$x=-1, -2
```

3.25B   **dhb561$x**   **HMR MORTGAGES $X: NOMINAL INTEREST RATES**

Question: If you do not know the effective interest rate: How high is the current annual nominal interest rate that {you / your household / the household} {pay / pays} for this loan {<IF HB180$x=1 (adjustable rate interest)> as result of the last adjustment}?

INTERVIEWER: Enter amount with a maximum of 3 decimal places.

Numeric entry in %,	*-1 - Don't know*
5 digits, 3 decimal places	*-2 - No answer*
	-3 - Question filtered

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Size over time

- **1st wave**: 9/10 to 6/11: **3,565 households,** 6,661 pers 16 ys and older

- **2nd wave:** 4/14 to 11/14: **4,461 households,** 9,259 pers 16 ys and older

- **3rd wave:** 3/17 to 10/17: **4,942 households**, 9,710 pers 16 ys and older

- The **4th wave** 2020 had to be postponed because of Corona and is being conducted in 2021, right now

Methodology

Main Features

- Representative sample of private households in Germany

- **Oversampling the wealthy**

- Face to face interviews every three years, with a minimum of fundamental changes

- Full CAPI

- Participation is voluntary

- **Multiple imputation**, to accommodate non-response

- Panel with refresher component: all participating households are recontacted

Oversampling the wealthy

- In terms of wealth structure, variation among the rich is much higher than among the poor. There are not many different ways of being poor…

- To understand the aggregates, it is necessary to understand the wealthy households – around half of total wealth is owned by the wealthiest 10%

- With known sample weights, the resulting estimates of totals will be unbiased. But the effective sample size will decrease, because there will be a disproportionate number of households with a low weight.

- Oversampling the wealthy is not easy – it means stratification according to a key characteristic the survey wants to find out about…

Oversampling the wealthy

- Three stages: a) selection of municipalities 2) selection of street segments in large cities, 3) selection of addresses from registers.

- Small municipalities: identify municipalities with high share of individuals paying high income taxes and sample disproportionately -- 8% in population, 30% in sample.

- Cities: identify wealthy street segments using microgeographic information on buildings and purchasing power and sample disproportionately -- 14% in population, 43% in sample.

Data from the first wave

- It works:

	Strat. 1: small other mun.	Strat. 2: small wealthy mun.	Strat. 3: other street segments	Strat. 4: wealthy street segments	Total sample
Net wealth, mean	251,880 (203,676)	405,746 (298,918)	151,868 (109,325)	782,212 (540,045)	374,709 (195,170)
Net wealth, median	101,320 (69,284)	236,048 (153,166)	27,220 (17,582)	351,630 (310,940)	147,872 (51,360)

Weighted estimates in brackets

Multiple imputation

- In a complex survey such as this, item nonresponse is highly prevalent. Most software packages can only process complete data. Unguarded estimation leads to severe biases

- Multiple imputation explored by Rubin (1978, 1987), see PHF documentation. Retention (or reconstruction) of general statistical features of joint distribution is core objective.

- Assumption: The non-response-mechanism is „missing at random" (MAR): The conditional probability of missing observations is fully explained by observed variables

- On the basis of these observations, missing variables are predicted

- This prediction is iterative, as conditioning variables may be missing as well…

Multiple imputation

- MI takes prediction uncertainty into account, to prevent biased variance and covariance estimates. Each missing value is replaced by several independently simulated values (implicates) that contain appropriately calibrated random shocks.

- PHF uses linear models for continuous and binary variables, and hot deck imputation for categorical variables.

- PHF research data base consists of 5 different fully imputed data sets that are like parallel universes, having the observed variables in common.

Wealth and its distribution in Germany

Core measures of household wealth
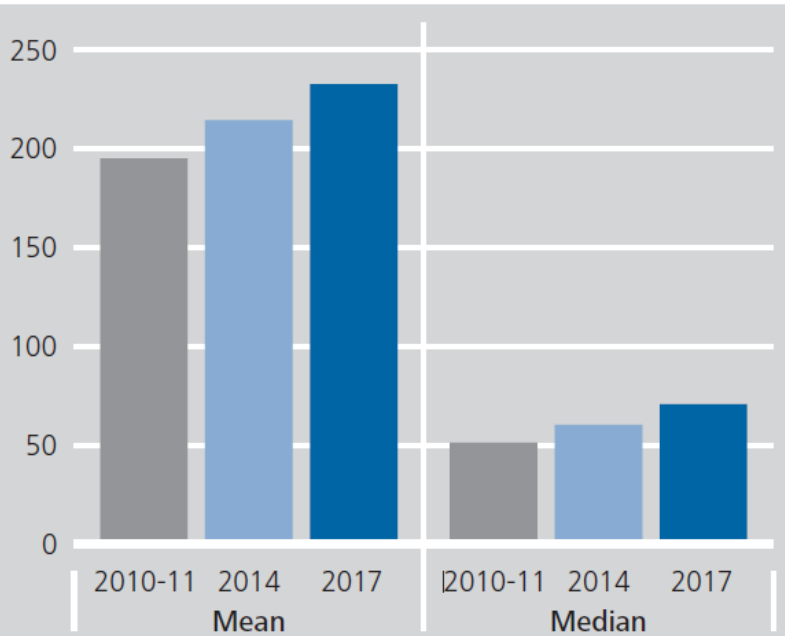
Average wealth of private households in 2017

Gross:	**262,500 €**
Net:	**232,800 €**

Median wealth in 2017

Gross:	**86,400 €**
Net:	**70,800 €**

Core measures of household wealth

Mean and median values of German households' net wealth distribution

€ thousand, as at March 2019

Sources: PHF 2010-11, PHF 2014, PHF 2017.
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- Mean net wealth (€232,800) is higher now than in Italy and approaches the values for Austria (Italy 2016: 206,000 €; Austria 2017: 250,000 €; USA 2016: 625,000 €)

- Median still lower than in many other countries (Italy 2016: 126,000 €; Austria 2017: 83,000 €; USA 2016: 88,000 €)
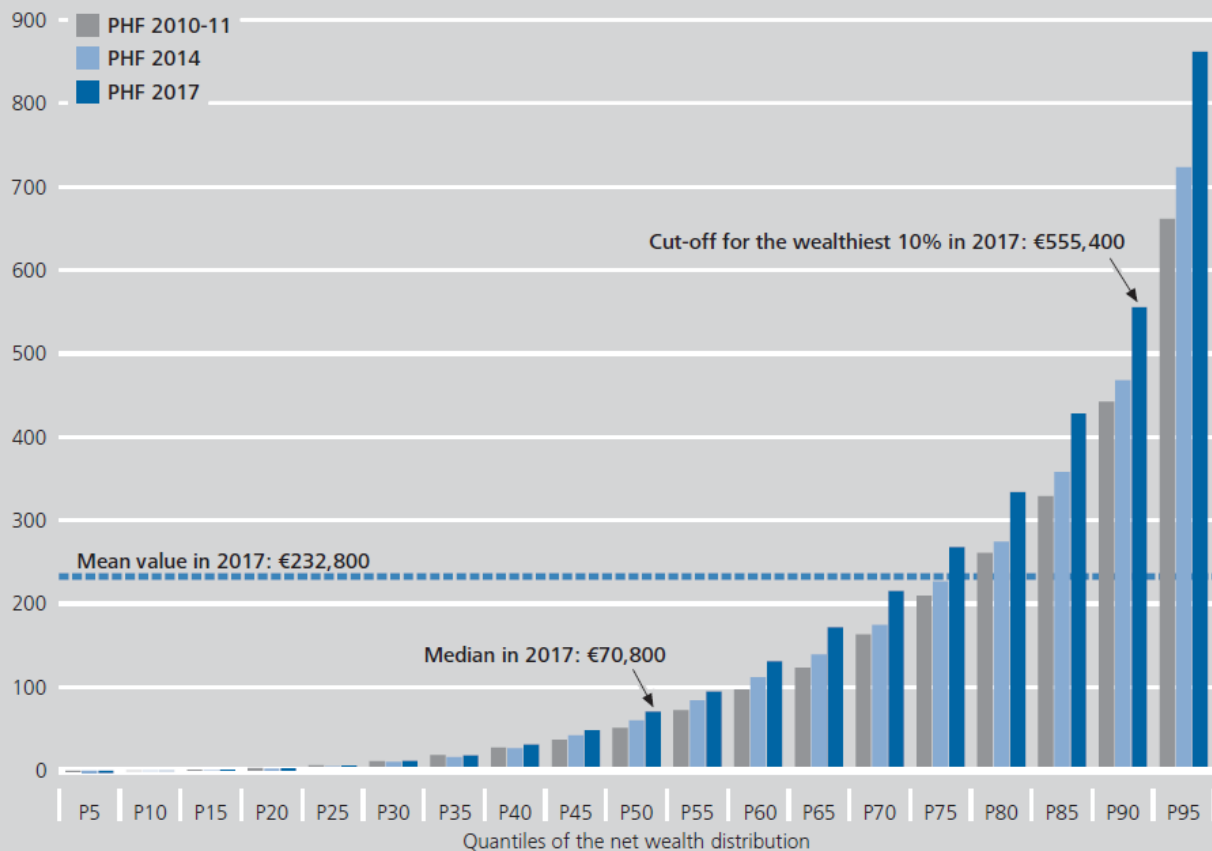
Core measures of household wealth

Why has net wealth increased?

- The increase of property prices and stock prices have increased the mean

- For the evolution of median wealth, higher househould incomes have been more important, as households were able to save and less prone to take on new credits.

- Lower interest rates have relieved household finances and enabled saving additionally.

Core measures of household wealth

Distribution of German households' net wealth* in 2010, 2014 and 2017

€ thousand, as at March 2019

Legend:
- PHF 2010-11
- PHF 2014
- PHF 2017

Cut-off for the wealthiest 10% in 2017: €555,400

Mean value in 2017: €232,800

Median in 2017: €70,800

Quantiles of the net wealth distribution (P5, P10, P15, P20, P25, P30, P35, P40, P45, P50, P55, P60, P65, P70, P75, P80, P85, P90, P95)

Sources: PHF 2010-11, PHF 2014 and PHF 2017. * Minimum values for each quantile.
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- Wealth has increased on a broad basis

- Due to property and stock prices, increases markedly in the upper half of the distribution

- For the evolution of median wealth, higher household incomes have been more important, as households were able to save and less prone to take on new credits

- Lower interest rates have relieved household finances and enabled additional savings

Inequality

Indicators of net wealth distribution in 2010-11, 2014 and 2017

Item	2010-11	2014	2017
Interquartile range	€203,000	€221,000	€262,000
P90-P10	€442,000	€468,000	€555,000
Mean value/median	3.8	3.6	3.3
P90/P50	8.6	7.8	7.8
Gini coefficient	76%	76%	74%
Share of total net wealth held by wealthiest 10%	59%	60%	55%

Source: PHF 2017 – data as at March 2019.
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- In Germany, wealth is rather unequally distributed

- In Italy, the Gini is around 60,5 and 64,5% since the beginning of the 90s

- In the USA, the Gini was between 78% and 81% for a long time and has risen to 86% in the last years
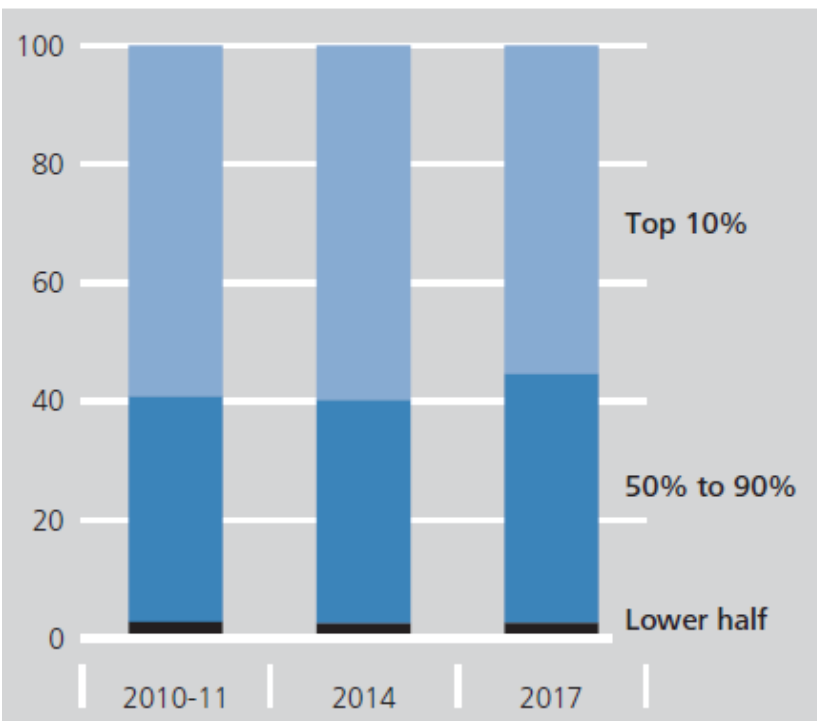
Inequality

Households' share in total net wealth

%, as at March 2019

- 100
- 80
- 60
- 40
- 20
- 0

Top 10%

50% to 90%

Lower half

2010-11   2014   2017

Sources: PHF 2010-11, PHF 2014 and PHF 2017.
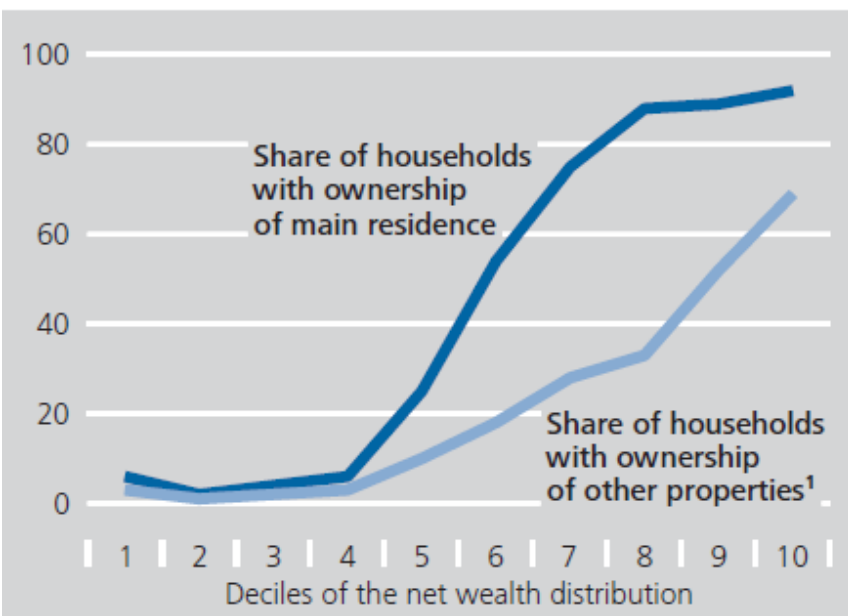Deutsche Bundesbank

- Share of poorer households relatively low

- Share of richest 10% has decreased

- Potential reason: underestimation at the upper bound of the distribution

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Inequality

- In Germany, the upper parts of the wealth distribution look much like the upper parts of the wealth distribution in other European countries.

- Compared to other countries, median wealth and wealth in the lower quantiles is lower.

- This is associated with a low rate of homeownership (the median household is not a homeowner), and a rather expensive, but generous social system, substituting savings for health, old age and schooling.

Real estate ownership along the net wealth distribution

Share of households as a percentage, as at March 2019

Share of households with ownership of main residence

Share of households with ownership of other properties[1]

Deciles of the net wealth distribution

Source: PHF 2017. **1** In this context, ownership of other properties includes only those properties which are not used for business purposes.

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How good are the survey aggregates?

- Aggregates from sectoral statistics and from wealth surveys do not always match

- Good match for real wealth items and debts. Fit is worse for financial assets and business wealth.

- Some core issues:

  - Different definitions of population

  - Underreporting

  - The extremely wealthy households are missing in the survey

- Intensive research ongoing. Alexander Erler will tell you more about it…

References

- The PHF: a comprehensive panel survey on household finances and wealth in Germany, by von Kalckreuth, Eisele, LeBlanc, Schmidt, Zhu
  https://www.bundesbank.de/resource/blob/617148/e6ba33aa5cb2f0fd12db5a4205b5cd23/mL/2012-07-10-dkp-13-data.pdf

- A complete user documentation:
  https://www.bundesbank.de/en/bundesbank/research/panel-on-household-finances/user-documentation

- Results of the 2017 wave
  https://www.bundesbank.de/resource/blob/796280/5eaebf3d73e4fdde961bd1dacab852f3/mL/2019-04-vermoegensbefragung-data.pdf (in English)

Thanks for listening!

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