

Observed (Wealth) Inequality based on Surveys: What it is useful for and why it is often misused.

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Outline

- 1 Data on Income and Wealth
- 2 What is Wealth and how to measure it?
- 3 From the household to the data point
- 4 Some empirical results for Austria
- 5 Cross country comparisons and their problems

INCOME \leftrightarrow Data

- National Accounts
 - ▶ Household sector instead of private households
 - ▶ Allow for crude estimation of functional income distribution (labor vs. capital)
 - ▶ No personal or household level distributions
- Administrative microdata
 - ▶ Tax and social security data
 - ▶ Allow for distributional analysis of certain forms of income at the personal level
 - ▶ (For most countries) distributional analysis including all forms of income not feasible
 - ▶ (For most countries) distributional analysis on the household level not feasible
- Microdata based on surveys
 - ▶ Allow for detailed distributional analysis of all income forms on personal and household level
 - ▶ Problems with regard to coverage of the population
 - ▶ Problems with regard to measurement, which are moreover different for different items (EU-SILC, register data)

- National Accounts

- ▶ Household sector instead of private households
- ▶ Good coverage of financial wealth; Real Assets and especially properties crudely estimated (mostly production based approach)
- ▶ Real assets mostly do not include properties or vehicles
- ▶ No personal or household level distributions

- Microdata based on surveys

- ▶ Allow for detailed distributional analysis of all forms of private wealth on personal and household level
- ▶ Problems with regard to coverage of the population (more severe than in the case of income)
- ▶ Distributional analysis on personal level not feasible (in most cases)
- ▶ Problems in case of cross country comparisons
- ▶ Mostly only rare snapshots

What is Wealth and how to measure it?

WHAT IS PRIVATE WEALTH IN A SCIENTIFIC SURVEY CONTEXT?

- Unit of Observation: mostly (private) household
 - ▶ Possession of or access to resources instead of ownership often more relevant
 - ▶ Control over some assets inside a household might differ from the ownership structure
 - ▶ It might be impossible to allocate all assets inside a household to individuals
- Material Wealth
 - ▶ Valuation necessary and sometimes difficult
- Social wealth and other types of wealth
 - ▶ Not transferable, not useable as collateral, not realizable during lifetime (state pension wealth, other insurance, etc.); more complex in case of death (e.g. widow-pensions)
 - ▶ State pension wealth (as other insurances) difficult to value (uncertainty, life expectancy, conditionality (widows etc.)), but info for estimation
 - ▶ Human wealth, impossible to value, but info for estimation
 - ▶ Cultural wealth, environmental wealth, impossible to value, hardly possible to allocate to households

→ concept of (private) net wealth (worth) (SCF, EFF, SHIW, etc.)
(Davies and Shorrocks 2000)

NET WEALTH IN THE HFCS (AND SCF)

Illustration 5



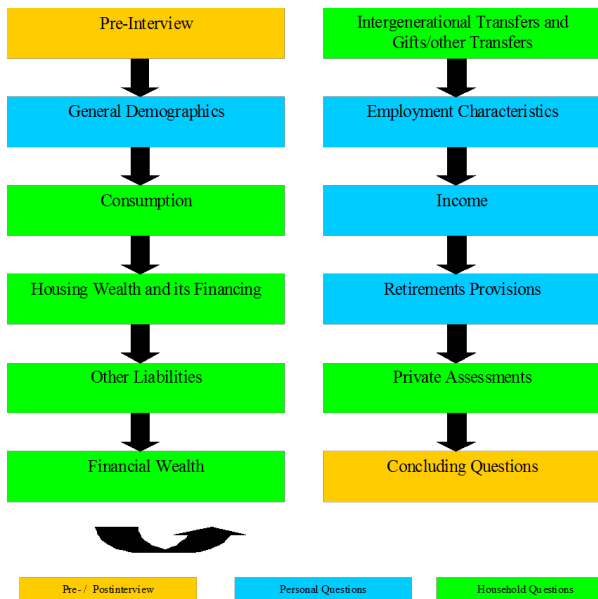
From the household to the data point

How to conduct a (wealth) survey?

1. Development

- Target population, questions you want to answer and items you want to know
- Interview mode (Paper based, web based, telephone based, personal, computer based personal)
- Design questionnaire according to interview mode
- Design of sample
- Decision on execution (company, etc.)
- Decision on data to be gathered besides the data which will be part of the userdata (interviewer control, Weighting, etc.)
- Design of reference materials for interviewers and respondents

Topics covered in typical wealth questionnaires

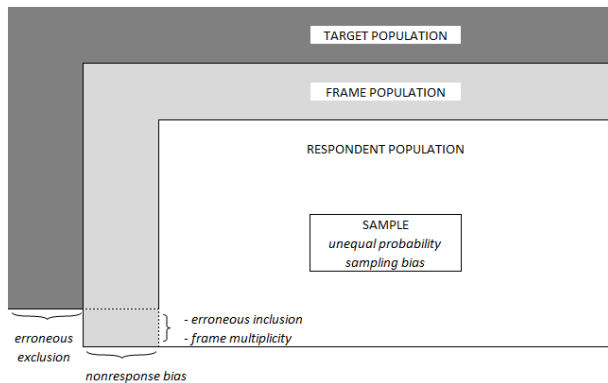


How to conduct a (wealth) survey?

2. Implementation

- Selection of sample
- Interviewer training
- Programming of questionnaire and logical and consistency checks
- Contact strategy
- Data collection
- Monitoring of field-phase
- Support of fieldphase and problem resolution strategies (e.g. via additional contacts)

Problems of Samples



Source: Adapted from Biemer and Christ (2008).

An example: Sample Design in Austria

- Stratification by NUTS-3 regions and number of population in municipalities (170 STRATA)
- Proportional to population (with some overproportional drawings in the case of Vienna because of higher expected unit-non-response)
- First Stage: **Zählsprengel**
 - ▶ Random draws (inside Strata) of 422 from a total of 8,745 enumeration district (*Zählsprengel*, PSU)
 - ▶ 3.9 Mio private p.o. box codes vs. 3.6 Mio registered main residences (Melderegister)
- Second Stage: **Household (p.o. box code)**
 - ▶ Random draws without replacement (inside *Zählsprengel*) from household dwellings (p.o. box code)
 - ▶ 8 households in Vienna and 12 in the rest of Austria (in each PSU)

How to conduct a (wealth) survey?

3. Processing

- Design and implementation of logical edits
- Detailed editing (ideally already during fieldphase)
- Analysis to support weighting. Design weights, Non-response Weights, poststratification weights.
- Design and implementation of imputations.
- Design and creation of information necessary for variance estimation (Information on STRATA etc. or replicate weights)
- Preliminary analysis to identify outliers and potentially re-editing or re-weighting

Interviewer Monitoring



EXAMPLE

Table 37: Interviewer ID is 66901

Personal Interviewer Characteristics			
Gender	Weiblich	Age	49
Region	Steiermark	Migration	Nein
Family Stats	Verheiratet		
Education	Pflichtschule	Occupation	Vollzeit
Main Occupation	IFES	Experience	Ja
How many month work for IFES			84
How many month work as Interviewer			84
Interviewer Wealth/Income Characteristics			
Own housing			Ja
Total net wealth (est.)	50.000	Total hh income (est.)	1.600
Performance Indicators			
Indicator		Individual	Mean
Region		STM / BGL	None
Duration		70,6	57,9
Questions		176,9	152,2
Item-Non-Response Total		5,93	7,61
Item-Non-Response Real		4,47	8,15
Item-Non-Response Finance		16,98	17,29
Seconds per Questions		25,49	23,74
SD of Seconds per Questions		6,01	4,79
Total Households		73	25
Successful Households		48	19
Non Successful Households		25	5
Unit Non-Response		34,25	14,32
Avg. Comments Interviewer		1,3	0,3
Tot. Comments Interviewer		60,0	5,5
Avg. Comments Respondent		0,6	0,2
Tot. Comments Respondent		31,0	4,3
Schooling			
Feedback		Graz	Postiv
Personal Self-Characterisation (Ich bin...)			

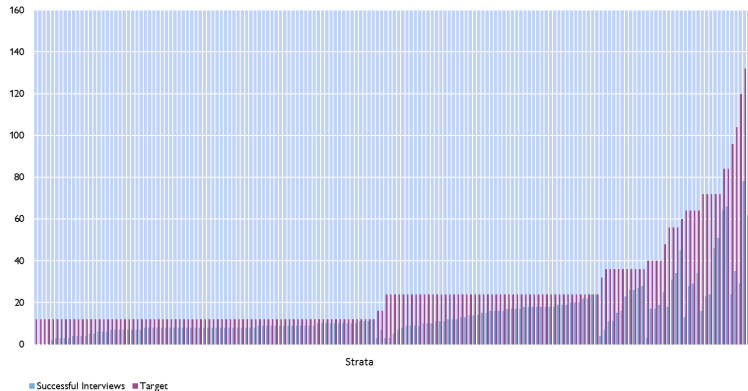
Consistency Checks and Quality Management

- Questionnaire-Programming
 - ▶ More than 150 internal consistency checks (hard and soft)
 - ▶ Quality check already during the interviews
 - ▶ Reduction of incorrect raw-data
- Monitoring of each household
 - ▶ Timely delivery of data to the OeNB during field phase
 - ▶ Close inspection of micro data (starting with household sheet) by two experts
 - ▶ Proper inspection of outliers
 - ▶ Possibility to re-contact household by phone to clarify problems

Response over STRATA

Successful Interviews by Stratum

Number of Households



Response Rates in the HFCS

Table 5.1 Response behaviour indicators in the HFCS

Country	Gross sample size	Net sample size	Response rate	Weighted response rate	Refusal rate	Cooperation rate	Contact rate	Eligibility rate
Belgium	11,376	2,364	21.8%	n.a.	57.6%	27.2%	80.1%	95.4%
Germany	20,501	3,565	18.7%	n.a.	69.7%	21.1%	94.2%	92.9%
Greece	6,354	2,971	47.2%	48.7%	46.4%	47.8%	98.7%	99.1%
Spain	11,782	6,197	56.7%*	n.a.	34.8%	58.4%	97.2%	92.6%
France	24,289	15,006	69.0%	69.6%	30.0%	69.0%	100%	89.8%
Italy	15,592	7,951	52.1%*	53.2%	37.8%	57.8%	90.2%	97.8%
Cyprus	3,938	1,237	31.4%	32.4%	56.6%	35.7%	88.0%	100%
Luxembourg	5,000	950	20.0%	19.3%	63.7%	21.0%	95.5%	94.9%
Malta	3,000	843	29.9%	30.4%	34.1%	44.3%	67.5%	94.0%
Netherlands	2,263	1,301	57.5%*	n.a.	42.5%	57.5%	100%	100%
Austria	4,436	2,380	55.7%	56.4%	39.6%	56.7%	98.1%	96.3%
Portugal	8,000	4,404	64.1%	59.0%	10.3%	80.2%	79.9%	85.9%
Slovenia	965	343	36.4%	35.6%	45.9%	41.6%	87.5%	97.8%
Slovakia	2,000	2,057	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Finland	13,525	10,989	82.2%*	85.0%	11.1%	86.2%	95.4%	98.7%

In France and Portugal, survey participation is compulsory for households.

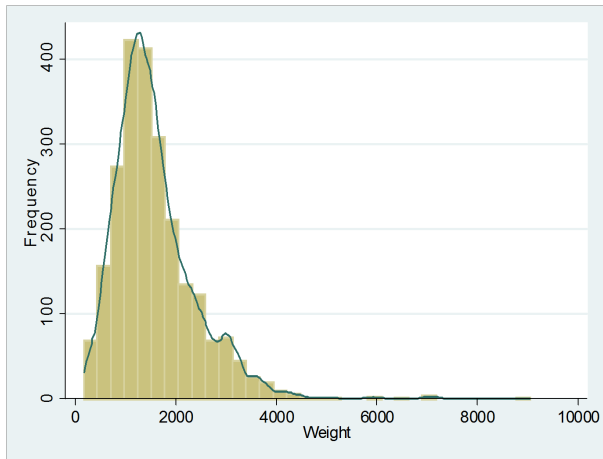
* Response rates for the whole sample; more comparable response rates are the response rates for households interviewed for the first time, which are 40.3% in Spain, 35.0% in Italy and 70.1% in Finland. This figure is not available for the Netherlands.

Table: Number and Type of Edits in the HFCS Austria

	Total	expert based	survey info	deleted
Total observations	840,714	840,714	840,714	840,714
Number of edits	21,837	6,867	13,767	1,203
Share of edited	2.60%	0.82%	1.64%	0.14%

Final weights

Figure: Distribution of Final Weights



Multiple Imputation

- Bayesian-based fully conditional specification multiple imputation approach
- 710 connected equations
 - ▶ 295 logit-regression, 56 ordered-logit-regressions, 76 multinomial-logit-regressions, 283 interval-regressions
- 6 cycles
- 5 multiple imputations
 - ▶ Uncertainty of imputed values accounted for
- Broad Conditioning Approach
 - ▶ Regression models with large quantity of explanatory variables to reduce bias and keep joint distributions

Variance Estimation

- Complex survey design needs to be accounted for
- Multiple Imputation needs to be accounted for
- As Survey design variables (PSUs, STRATA, etc.) can not be part of the dataset (due to anonymization) Replicate Weights are provided


How to conduct a (wealth) survey?

3. Dissemination

- Review of the data to identify possibly identification (of households) problems
- Anonymisation procedures
- Creation of documentation for data users
- Publication of first results - data landscape.
- User support
- Evaluation

Bias-variance trade-off in data production

- In case of complex surveys all steps of data production might influence statistical inference produced using the final dataset
- Among these are: Construction of questions asked, definition of target population, sampling design, coverage, non-response, protocols for survey execution, survey mode, editing, imputation, weighting and especially weight trimming, tools for variance estimation.
- Numerous decisions have the potential to affect true bias, true uncertainty of estimates and the degree of true bias or uncertainty that is actually measured.
- There is a trade-off between measured bias and uncertainty in choices made in statistical processing.
- E.g. trimming of weights for outliers typically lowers the measured variance of final estimates, but at the expense of introducing a formal bias

→ If lot of variance is traded against bias that will more often lead to “significant” results, even though they may have a larger true bias,  which cannot be measured.

Some empirical results for Austria

Subcomponents of Net Wealth

Table 2

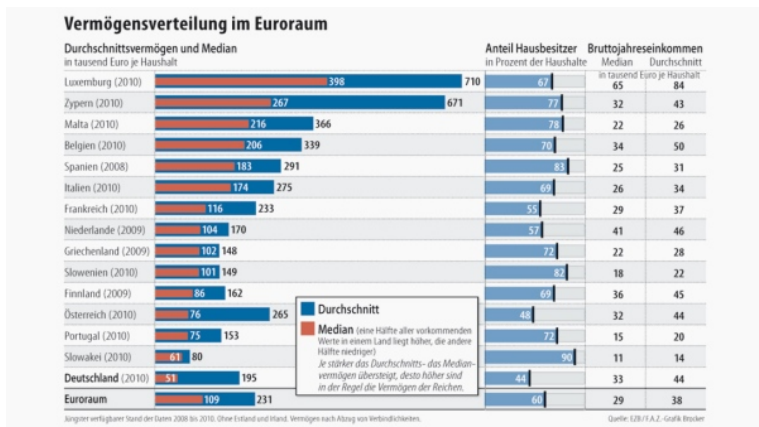
Subcomponents of Net Wealth

	Participation	Median	Mean	Mean-to- median ratio
	%	EUR		
Real assets				
vehicles	74.9	8,000	13,088	1.6
main residence	47.7	200,000	258,072	1.3
other valuables	23.6	3,909	12,835	3.3
other real estate property	13.4	94,028	227,929	2.4
investment in self-employed businesses (incl. farms)	9.4	180,603	731,425	4.0
Financial assets				
sight accounts	99.0	707	3,171	4.5
savings accounts	87.1	11,657	30,062	2.6
savings plans with building and loan associations	54.7	3,414	5,291	1.5
life insurance contracts	38.0	11,137	26,922	2.4
money owed to household	10.3	2,620	15,754	6.0
mutual funds	10.0	11,248	55,414	4.9
stocks	5.3	7,086	26,864	3.8
bonds	3.5	13,832	102,860	7.4
other financial assets	2.3	4,722	45,846	9.7
Debt				
collateralized debt	18.4	37,546	76,288	2.0
main residence	16.6	37,332	72,745	1.9
other real estate property	2.4	36,397	80,204	2.2
uncollateralized debt	21.4	3,016	12,687	4.2
overdrafts	13.6	1,208	2,349	1.9
uncollateralized loan	11.1	8,000	21,475	2.7
outstanding balance on credit cards	1.5	540	966	1.8

Source: HFCS Austria 2010, OeNB.

Cross country comparisons and their problems

FAZ HEADLINE: “DEUTSCHE SIND DIE ÄRMSTEN IM EURORAUM”



MOTIVATION

Common misinterpretations and/or misconceptions of researchers before and after HFCS First Wave Release:

- Misunderstandings with regard to target populations
- Mixing up wealth and welfare
- Country rankings of the “rich greeks, poor germans” type
- Wrong ad-hoc estimations of “missing” wealth items
- Wrong conceptions about correlations of main asset types
- Ad-hoc explanations of differences in wealth of the “homeownership ratio” type
- Mixing up correlation and causation
- ...and many more

REASONS FOR DIFFERENCES?

- Methodological reasons such as Sampling, Coverage, Editing, Weighting, Imputation, etc.
- Historical reasons such as war, german reunion, transition in eastern europe, etc.
- Institutional reasons such as pension system, housing subsidies, tax system, etc.
- Structural differences in the unit of observations (size and age patterns of households)
- Behavioural differences

WHAT MEASURE TO USE

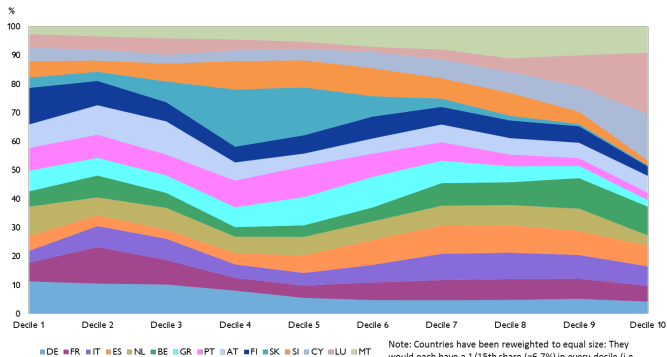
...depending on the questions

- Mean?: Bad idea as not robust
- Gini?: not robust, might cancel out strong differences if no stochastic dominance, questionable with negative values
- Some type of censored mean?: Better, but nice properties of the mean lost
- Median?: Better, as a robust statistic, however distributions around the median are crucial
- Percentile Ratios: Robust, but distributions around percentiles matter even more

RICH GREEKS, POOR GERMANS?

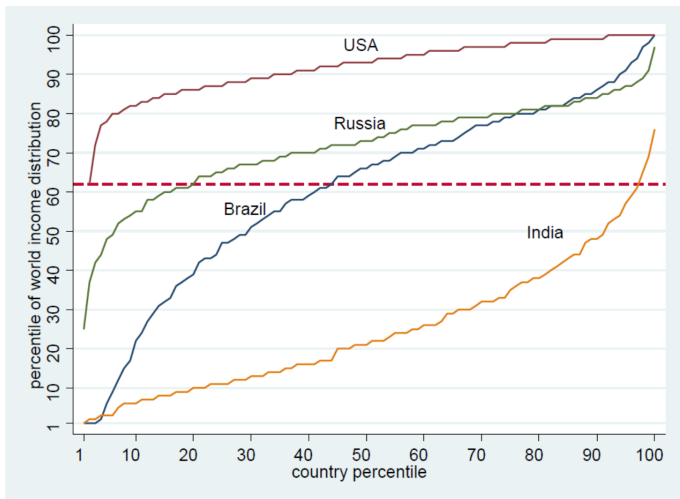
Chart 2

Composition of Euro Area Net Wealth Deciles by Countries



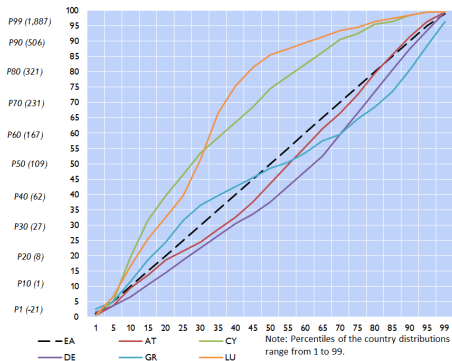
Source: OeNB.

INCOME (MILANOVIC 2011)



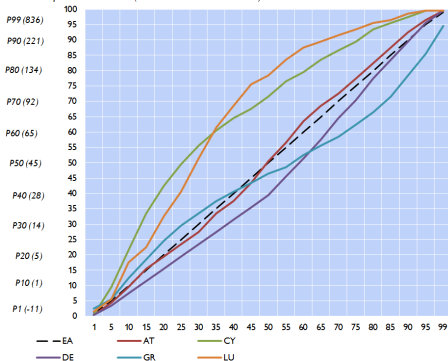
COMPARING NET WEALTH DISTRIBUTIONS I

Percentiles of euro area distribution (value in EUR thousands in brackets)



(a) Household

Percentiles of euro area distribution (value in EUR thousands in brackets)



(b) Personal

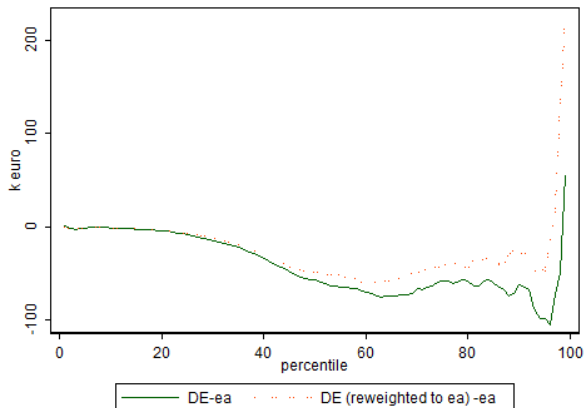
HOUSEHOLD STRUCTURE

Table: Occurrence of Top 10 countrywise household types among the euroarea top 30 household types in Percent of the respective household populations (Fessler, Lindner, Segalla ECB WP 1663)

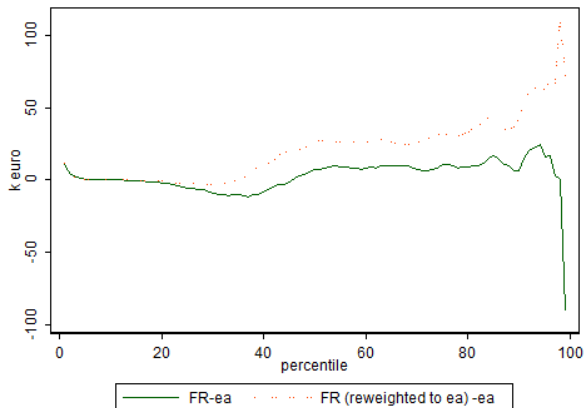
Top 30 EA	HH Size	Categories	EA	AT	BE	DE	ES	FI	FR	GR	IT	LU	MT	NL	PT	SL	SK
1	2	3132	10.2	13.3	10.2	12.7	7.6	12.8	11.6	6.4	6.7	7.2	7.4	9.3	9.0	10.7	8.0
2	1	42	9.5	8.8	7.7	10.2	7.5	10.4	11.3	6.7	9.6	5.7	6.8	8.2	8.5	11.4	6.1
3	2	4142	9.1	7.3	9.4	10.1	8.1	7.6	7.0	8.8	11.2	7.9	8.4	9.1	9.3	5.2	4.9
4	1	31	7.0	7.7	7.9	10.0	3.7	9.2	6.7	4.1	9.8	4.6	12.3	3.3	8.8	3.5	
5	1	32	5.7	10.0	6.9	5.7		8.0	6.6	3.6	5.2	5.6	3.8	8.1	2.8	3.8	5.2
6	4	13133132	5.6	4.0	4.6	4.7	6.1	4.9	6.0	7.4	6.8	7.6	8.0	5.8	5.1	7.0	
7	1	41	3.6	3.4	5.1	4.3		3.3	4.0		3.4	3.1		2.7			3.6
8	3	133132	3.4				5.2			3.3	4.7		4.3		4.7		
9	1	21	3.3	4.7	3.4	5.3		5.1	3.8								
10	2	2122	3.2	3.3	2.9		3.1	6.2	4.6			3.5		4.9			
11	3	213132	3.0				3.3			4.6	3.8	3.3	7.1		5.2	4.3	4.7
12	2	3241	2.8			3.4				4.0				2.7			
13	1	22	2.6	4.1		4.2		4.0				3.0		3.1			
14	4	21223132	2.4				4.3			4.1	4.3		5.2				5.5
15	3	223132	2.1				3.2						3.8		3.7	3.5	3.6
16	3	132122	2.0						2.8								
17	4	13132122	1.7		2.8												
18	4	13223132	1.6												2.7		
19	4	13213132	1.6											3.0			
20	4	13132231	1.4						3.4								
21	4	21213132	1.4													4.4	3.5
22	3	132231	1.1														
23	2	3142	1.0														
24	4	22223132	1.0													3.3	
25	2	2132	0.9														
26	2	2231	0.9														
27	2	1332	0.8														
28	2	2232	0.7														
29	3	131332	0.6														
30	2	3242	0.5														
Sum of Countrywise Top 10			66.6	60.9	70.5	52.3	71.5	64.4	52.3	59.8	56.7	59.6	66.1	54.0	62.3	48.7	
Sum of Euroarea Top 30			90.6	91.7	90.2	94.1	83.7	94.7	92.6	84.0	89.2	89.8	87.1	92.8	82.9	85.6	82.7

Two numbers for each individual in a household, where the first refers to age category ((1 = [-; 15]; 2 = [16; 34]; 3 = [35; 64]; 4 = [65; +])) and the second refers to gender for all individuals aged 16+ (1 = male; 2 = female; 3 = below 16). The code is sorted by individual age. The most common household type 3132 is therefore a two person household (4 digits), consisting of a man aged between 35 and 64 [31] and a woman aged between 35 and 64 [32].

RESULTS ↪ Germany



RESULTS ↪ France



AN EXAMPLE FOR AD-HOC INTERPRETATION: HOMEOWNERSHIP

	Owners of household main residence	Nonowners of household main residence	Median net wealth
EA	217.6	9.1	109.2
AT	241.2	11.6	76.4
BE	304.1	7.6	206.2
CY	349.0	16.3	266.9
DE	215.5	10.3	51.4
ES	214.3	5.1	182.7
FI	153.1	2.8	85.8
FR	238.4	7.8	115.8
GR	136.5	5.4	101.9
IT	250.8	10.8	173.5
LU	556.2	22.1	397.8
MT	267.0	21.7	215.9
NL	214.8	19.3	103.6
PT	106.1	4.5	75.2
SI	134.0	3.5	100.7
SK	65.6	2.2	61.2

BETWEEN AND WITHIN COUNTRY VARIATION

- Homeownership rate ranges from 44.2% (Germany) and 47.7% (Austria) to 82.7% (Spain) and even 89.9% in Slovakia.
- However, Vienna has a homeownership rate of 19.8% and 74.6% for Burgenland.
- Urbanization is not the reason as Luxembourg has homeownership rate of 67.1%.
- Interpreting homeownership as main driver in wealth differences across countries seems to be a strong oversimplification.
- The act of buying a house does not make you richer. But the act of having bought a home years ago might make you (seem) richer now.

So...

- Things are complicated.
- Take care.
- Thank you.