



EUROPEAN CENTRAL BANK

EUROSYSTEM

International harmonisation and comparison of wealth data – Household Finance and Consumption Survey

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Outline

1. Household Finance and Consumption Survey – introduction
2. Harmonisation of survey methodologies
3. Harmonisation of output data
4. Interpretation of results
5. What you can do with the data- example

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What is the Household Finance and Consumption Survey (HFCS)?

- Cross-country comparable micro data on the wealth of European households
- Country coverage:
- First wave (around **2010**): 15 countries
- Second wave (around **2014**): 20 countries (80,000+ households)
- Third wave (around **2017**, to be published in 2019):
 - All 19 euro area countries + Croatia, Hungary, Poland, (Denmark)



Background

- Household-level data are informative on **distributional issues** and can be relevant for the transmission of monetary policy and for **financial stability**
- Macro data (e.g. financial accounts) do not reveal developments of **different population groups**
- Existing (pre-2010) household wealth surveys in Spain, Italy, France, the Netherlands and Finland, but no ex-ante harmonised data source that allows comparisons between various countries

Background

- In 2007, the **Household Finance and Consumption Network** started working on a common set of variables and harmonised methodologies
 - No legal basis, gentlemen's agreement
- Existing household wealth surveys to be gradually harmonised with the HFCS output
- Experiences from similar European wide surveys on **income** (EU Statistics on Income and Living Conditions – EU-SILC) and **consumption** (Household Budget Survey – HBS)
 - Data structure and most demographic variables adapted from EU-SILC
- Consultant from the US Federal reserve board, having conducted a Survey of Consumer Finances since 1983
- First fieldwork (mainly) in 2010, first results released in April 2013.

Areas covered by the HFCS

Household
wealth



- Real and financial assets
- Liabilities
- Pension wealth

Household
Saving /
Wealth
accumulation



- Income
- Consumption
- Inheritances and gifts

Other
covariates



- Demographics
- Employment

Output harmonisation

- The HFCS has a **list of variables** with harmonised definitions and coding (answer categories)
 - Core variables to be collected in every country
 - Non-core variables: collection voluntary, but if collected, a harmonised definition should be used
- In addition there is a **blueprint questionnaire** that countries can, but do not have to apply
- Comparison of **output data** will be discussed more in detail later

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How to achieve comparable data?

- The most important and most underrated feature:
- **How to produce** data that can be compared across countries?



Harmonised survey methodologies

- The HFCN provides very detailed instructions and requirements on how to conduct the survey
- **Two main reasons:**
 1. The output data can only be comparable, if produced with methodologies comparable across countries
 2. Countries with no previous experience in conducting surveys can adapt the HFCS methodological guidelines and do not invent everything themselves

Methodological guidelines include

1. Survey mode
 2. Sampling, including oversampling of the wealthy
 3. Weighting
 4. Imputation
 5. Variance estimation
- What follows is a brief overview of these topics

2.1 Survey mode

- The preferred survey mode is **Computer Assisted Personal Interview (CAPI)**
- Interviewers enter the household residence for the interview
- Both **personal** and **household** level questions
- Personal questions asked preferably to each (adult) household member:
 - Demographics
 - Employment
 - Part of income (labour and pension income, unemployment benefits)
 - Pension wealth
- Household level questions
 - Wealth and liabilities
 - Private businesses
 - Part of income (other transfers, capital income)
 - Consumption

Survey mode in practice

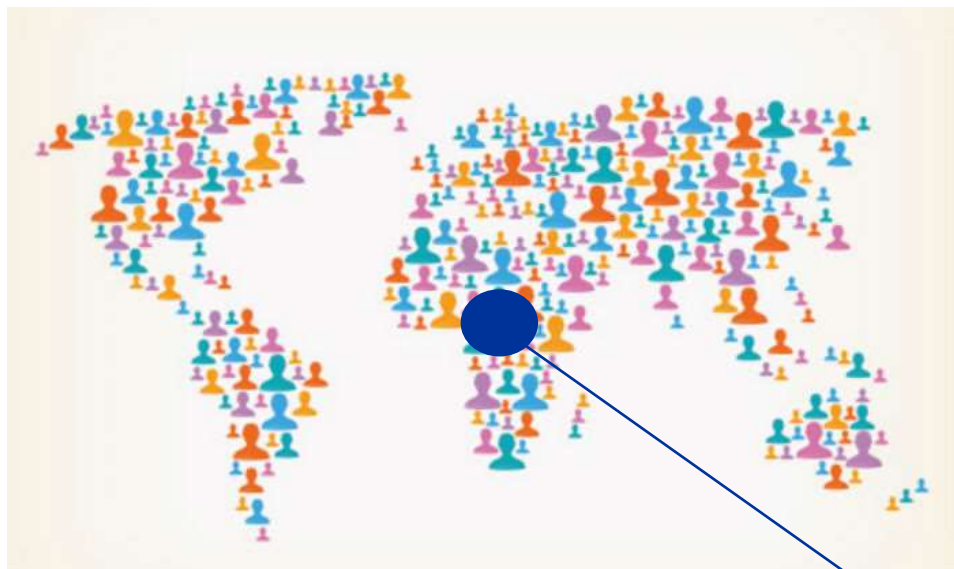
- In the second HFCS wave 18 out of 20 countries applied CAPI
- Telephone interview (CATI) in Finland (merged to income survey) and Web interviews (CAWI) in the Netherlands
- Main problems with CATI: length of interview, ability to interview all household members
- Main problem with CAWI: potential bias of the sample, no interaction with interviewer



Other data sources

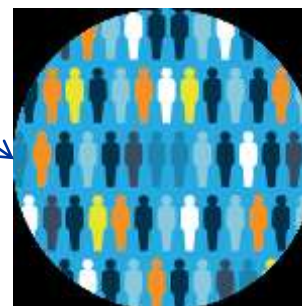
- Where available, interview data can be complemented with **administrative data** (output harmonisation)
- For example: income from government authorities, financial wealth from tax authorities or financial institutes, information on pensions
- Administrative data can be used:
 - to replace interview data as such
 - to estimate the value of a survey variable (e.g. ownership of real estate + information on prices)
 - in the editing phase.

2.2 Sampling



Survey producers use a **sampling frame** that should (as much as possible) cover the entire target population...

...to draw a (gross) **sample**,
i.e. select households that
are invited to participate in
the survey



Sampling – theory and practice

- Examples of **sampling frames** from which the actual sample is drawn from
 - Population register
 - Register of dwellings / addresses
 - Population census
 - Customer register of electricity authority
- Most important common feature: **probability sampling**
 - each household in the sampling frame has a non-zero probability of being selected in the sample, and this probability is known beforehand
- **Stratification**: defining the structure of the sample by e.g. region and municipality size
- Samples should be representative at the country level
 - Sample sizes (2014) vary from 1,000 in Malta to 12,000 in France

Oversampling of wealthy

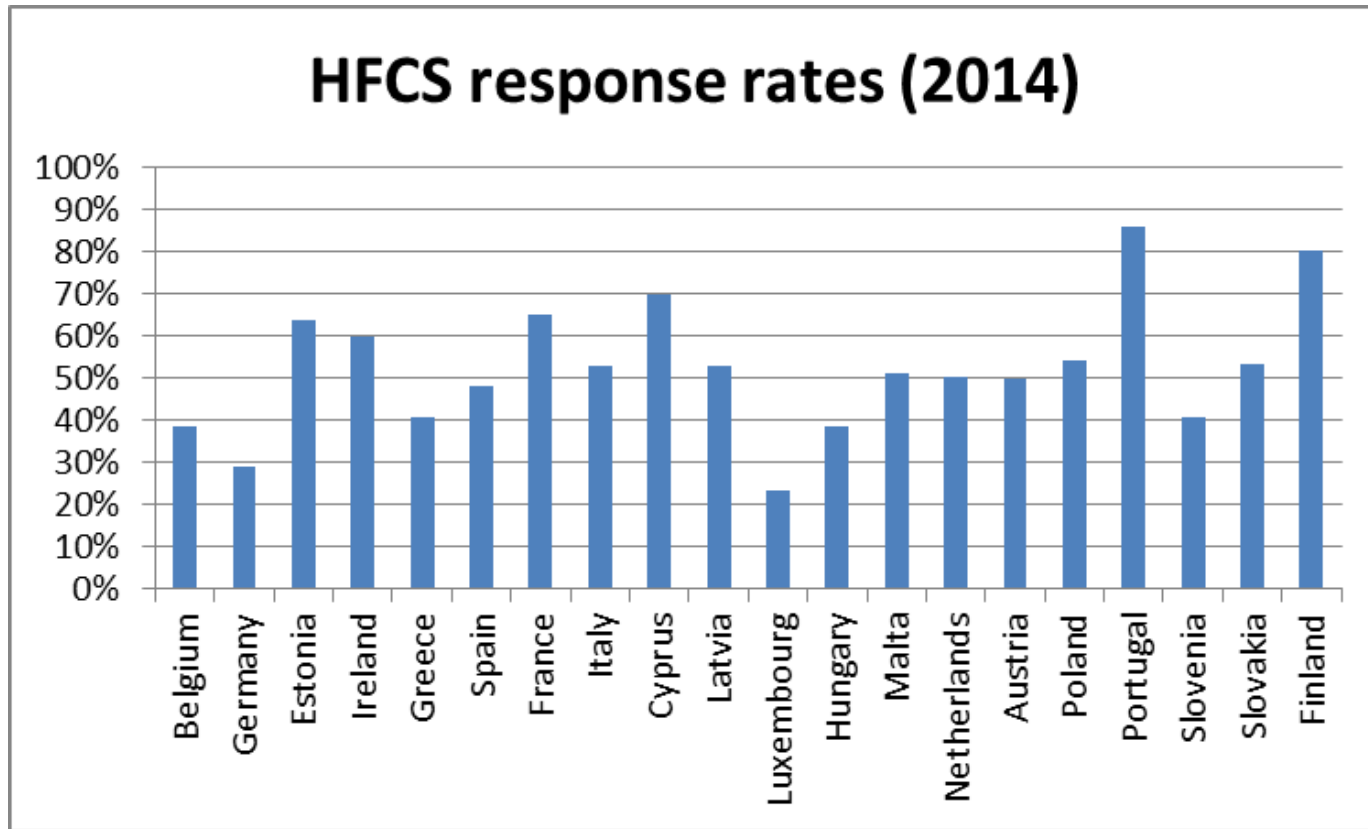
- **Oversampling of the wealthy**
 - Distribution of wealth skewed, to obtain reliable information for the entire distribution, the sample should include proportionally more wealthy households
- Not all euro area countries are able to oversample
 - **Lack of data sources** from which wealthy households can be ex-ante identified
- Examples of sources for oversampling
 - Wealth tax (personal)
 - Income tax data (personal)
 - Electricity consumption (personal)
 - Average personal income (regional)
 - List of wealthy street sections (regional)

2.3 Unit non-response and weighting

- Unit non-response means that all units invited to participate in the survey do not reply
 - Households cannot be contacted
 - Households refuse to participate in the survey
- The net sample (households that are interviewed) is smaller than the gross sample
 - Main problem: if refusal to participate connected with household characteristics (e.g. rich households tend to participate less frequently)

Relatively high unit non-response in HFCS

- Unit non-response a major problem in wealth surveys



Adjusting for non-response: survey weights

- No results from survey data should be calculated without using proper **survey weights!**
- Each household interviewed for the survey represents a certain number of households in the population being analysed
- Four main steps in the production of survey weight:
 1. Probability of selection
 - how many one person households from Umbria are selected?
 2. Coverage adjustment
 - has the person we sampled from Umbria moved abroad
 3. Non-response adjustment
 - if one person households from Umbria have relatively high non-response rates, their weights will be bigger
 4. Calibration
 - to match the known population structure of e.g. the census

2.4 Item non-response and imputation

- Every respondent does not know – or does not want to reveal – the answer to all questions (**item non-response**)
- However, they still provide valuable information to the survey
- Some variables, particularly balance sheet and income variables, have to be **imputed**, if there is no answer from the respondent
 - i.e. for every household there is a non-missing value for all such variables



Imputation

- With modelling, impute a value of a variable that should have been reported, but was not
- Using the **answers of other households** that have responded to the question
- May require several steps
 - E.g. first impute, whether the household has a mortgage, and if imputed as 'yes', impute the outstanding value
- HFCS feature: **multiple imputation**
 - Impute five values for each observation to reflect the uncertainty of imputations
- Several detailed methodological guidelines + common programs provided in the HFCS

Why is imputation important?

- Imputation requires a significant amount of time and resources
- **What if we do not impute?**
- If we include partial balance sheets in the data (which we don't)
 - Some balance sheets in the data will have lower values than in reality
- If we exclude all households with partial balance sheets from the calculations (which we do)
 - Biased set of households in the data, households with complicated balance sheets tend to have more missing observations



2.5 Variance estimation

- Finally, to show the uncertainty of the data, we need **standard errors**
- The method: bootstrapping using replicate weights
- Draw 1000 replicate samples from the net sample with replacement
- Meaning that every household can be included 0 – n times in each replicate sample

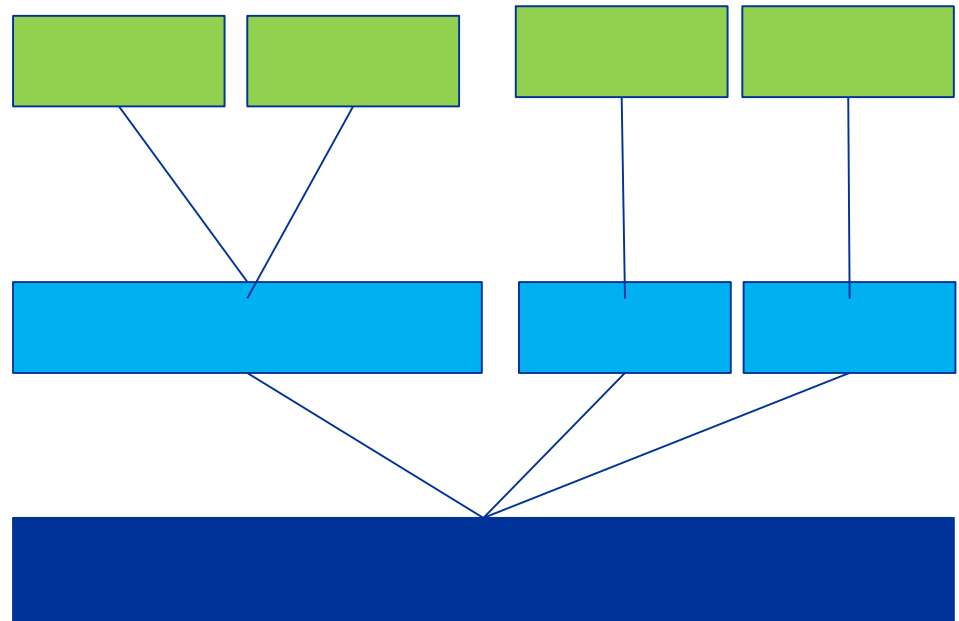
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Harmonisation of output data and results

Three levels

- National variables
- HFCS output variables
- HFCS derived variables



National level variables

- May have a different question **wording** than in the HFCS blueprint questionnaire
- May have different **answer categories** than the HFCS
 - E.g. on labour status, legal form of family business
- One HFCS variable may be constructed from **several** national level variables
 - E.g. if considered useful to ask separately for various types of deposits
- However, in the end each HFCS country provides the information to the ECB in a **harmonised format**

HFCS output variables

HB0900 current price of household main residence

Core

Impute

Question wording: [What is the value of this property, i.e. if you could sell it now how much do you think would be the price of it?]

Filtering: If ((HB0300=1)OR(HB0300=2))

Type: single numerical question

Unit : Household

Coding:

Numerical value in EUR, 9 digits

Special codes:

-1 - Don't know

-2 - No answer

HFCS derived variables (indicators)

- Consistent reporting of results, definitions of wealth and other important concepts
- For every indicator, we use the same set of output variables for every country
- Example:
- **Non-financial wealth** = Value of household main residence + value of other real estate properties + value of vehicles + value of valuables + value of self-employment business

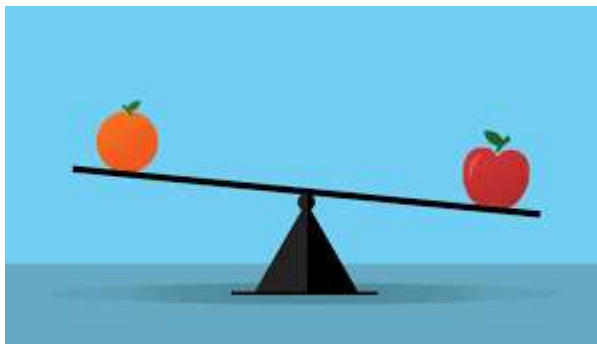
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From harmonised methodology to comparable results

- Simple, isn't it?
- Now, all we have to do is

Compare
And
Understand
The results



Some results from the HFCS second wave

- Reference year for wealth and liabilities:
- 2014: Belgium, Germany, Greece, France, Italy, Cyprus, Latvia. Luxembourg, Hungary, Austria, Poland, Slovenia, Slovakia
- 2013: Estonia, Ireland, Malta, Netherlands, Portugal, Finland
- 2012: Spain

What we wanted to tell the world



Statistics Paper Series

Household Finance and Consumption Network

The Household Finance and
Consumption Survey:
results from the second wave

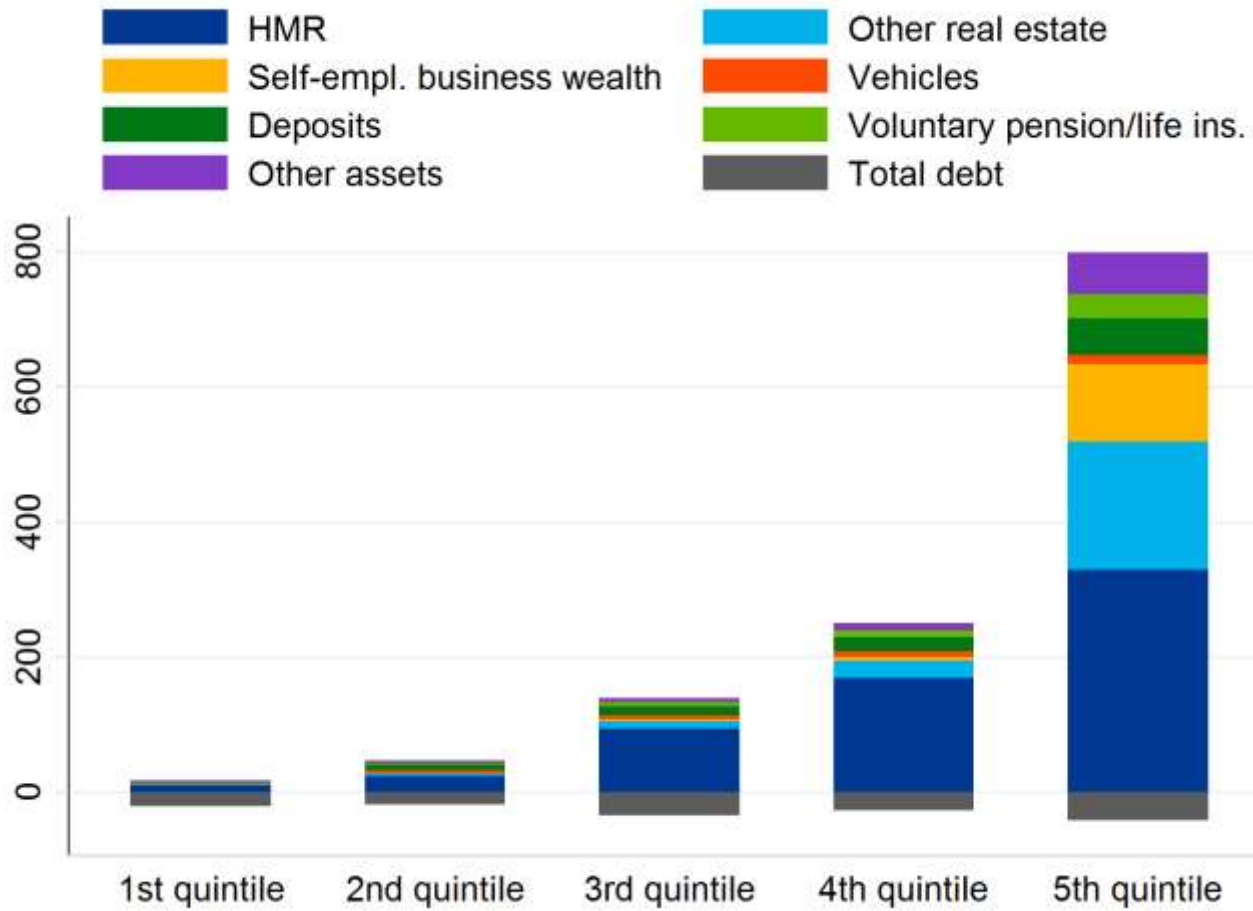


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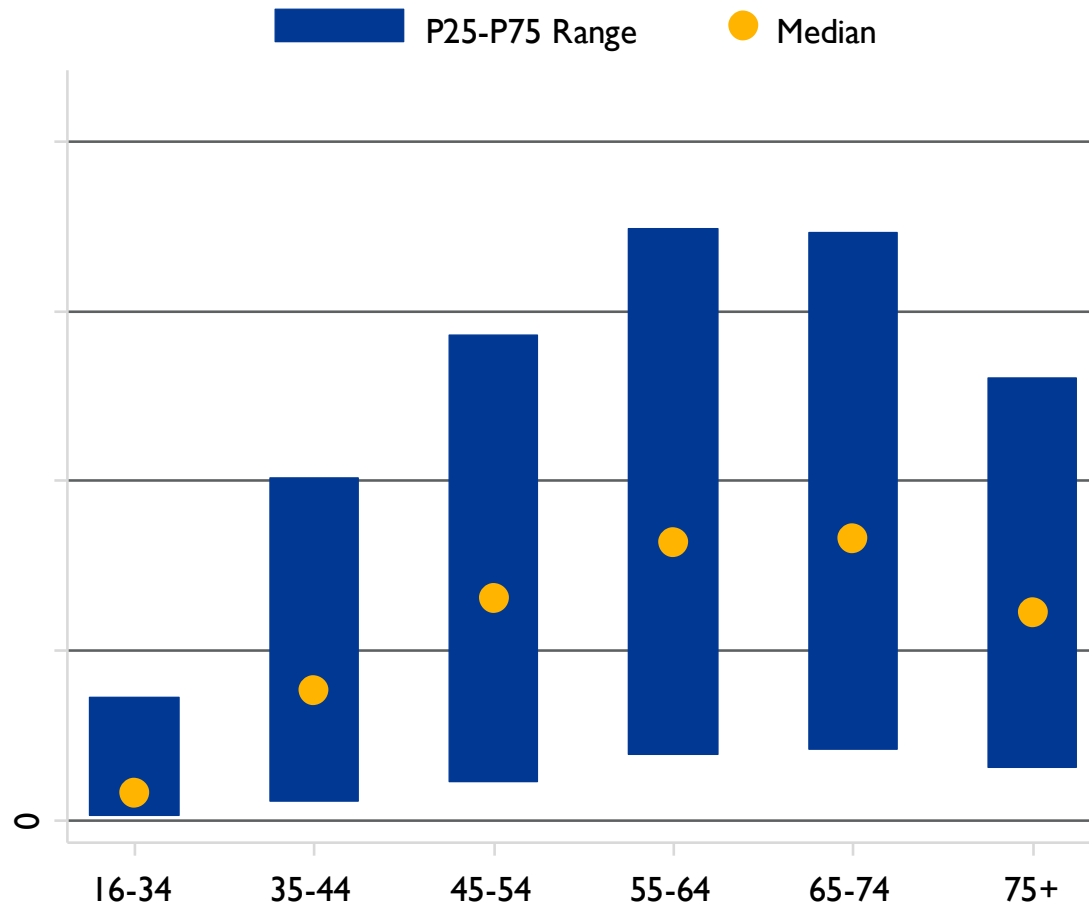
Size and composition of household portfolios in euro area



Stylized Facts:

1. Household Main Residence (HMR) is the largest asset
2. Total assets are dominated by real assets
3. Portfolios are in general not very diversified, though less so for the rich

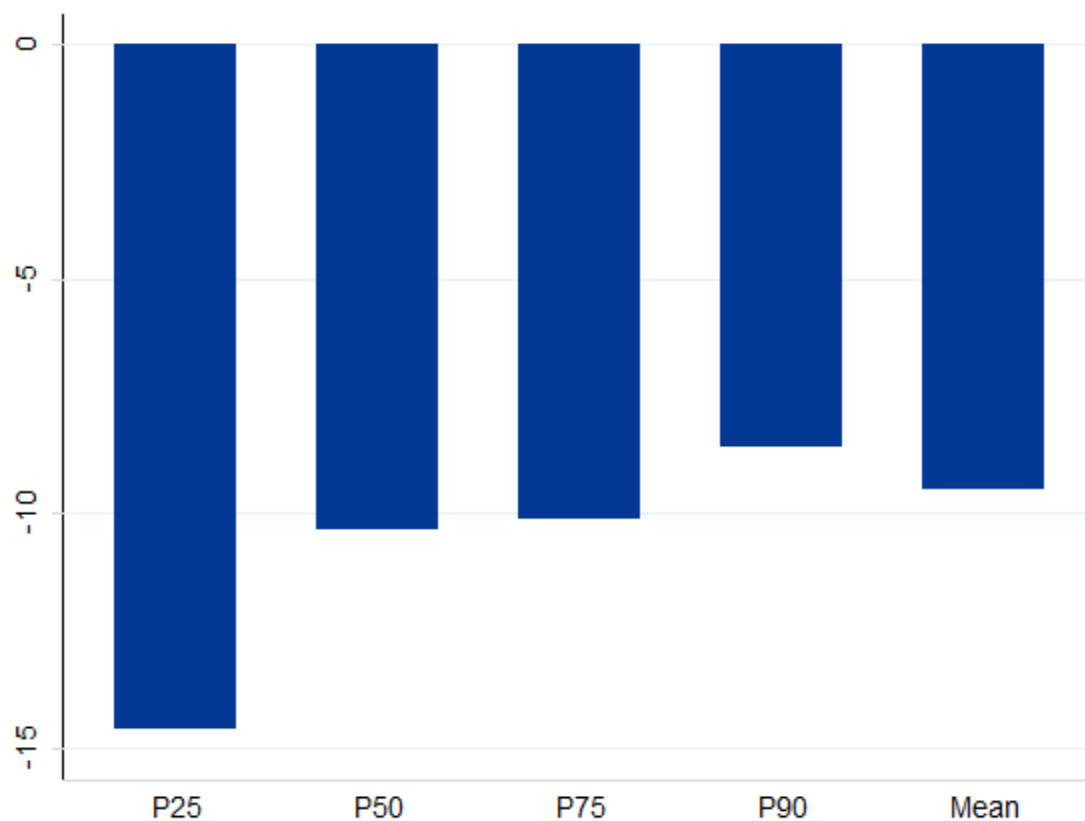
Wealth heterogeneity persists across life cycle



Distribution of Net Wealth by Age of Reference Person
(age in years, EUR Thousands)

Hump-shaped profile of the median wealth and of the P25/P75 range

Impact of the financial crisis

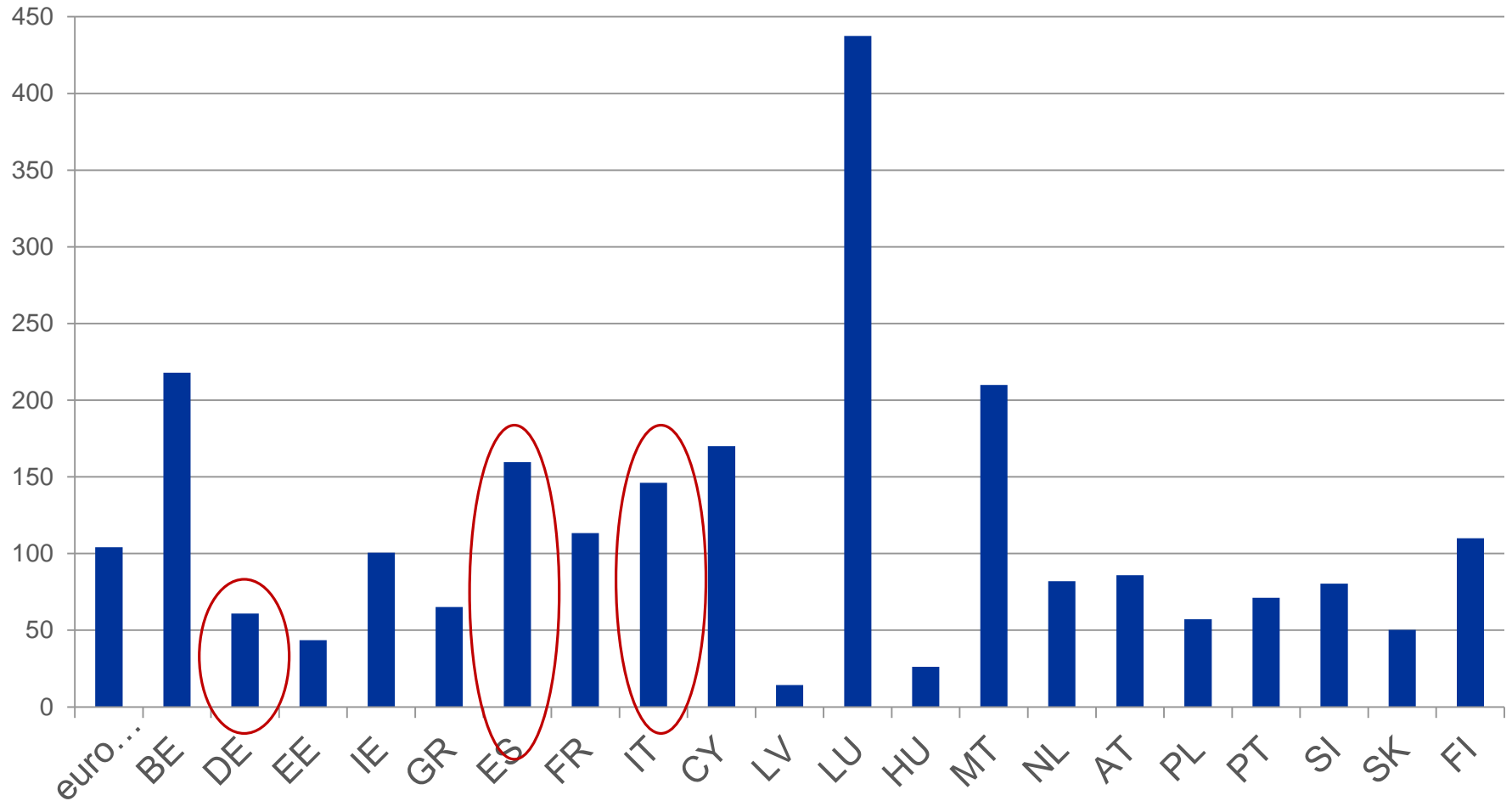


Decline in household Net Wealth between 2010 – 2014 across the wealth distribution

What the press wanted to tell the world



Median household net wealth by country, 1,000 €



Most frequently asked questions

- Why are Germans so poor?
- Are the data reliable?
- Can we compare the data across countries?

Correct interpretation of data

- The HFCS is not the 'wealth of nations', it measures wealth of the **household sector**
 - But of course, we cannot avoid comparisons across countries
- Measures **points of distribution** (e.g. median) much better than aggregates (e.g. mean)
 - But points of distribution do not necessarily reveal aggregates

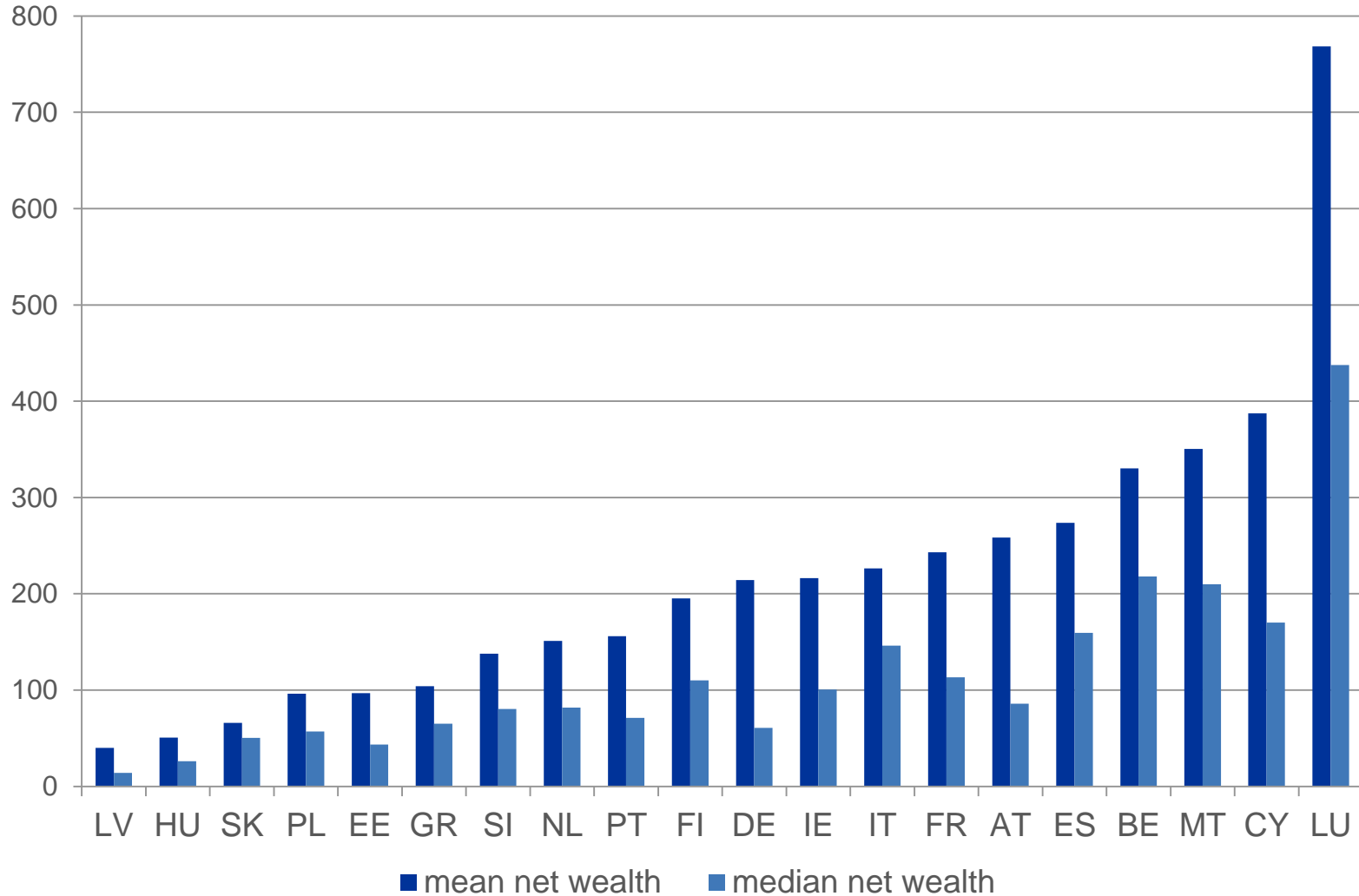
Harmonisation vs. interpretation of results

- ✓ Data are produced with sufficiently harmonised methods
- ✓ Variables are collected with identical definitions
- ✓ The concept of wealth is identical in all countries

But

- To interpret the results one needs to understand what is measured and some fundamental institutional and demographic differences between countries

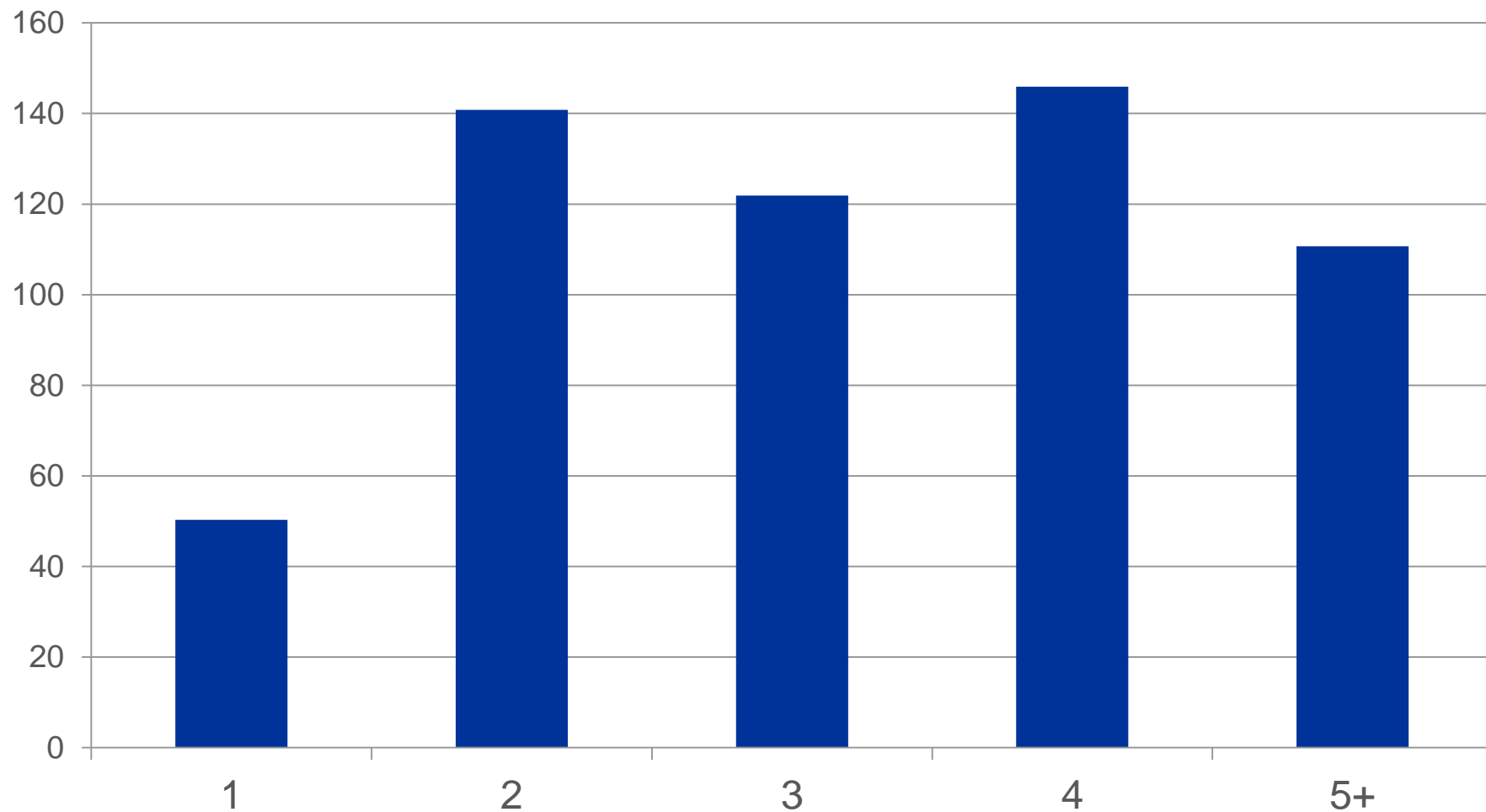
Mean and median household wealth, 1000 €



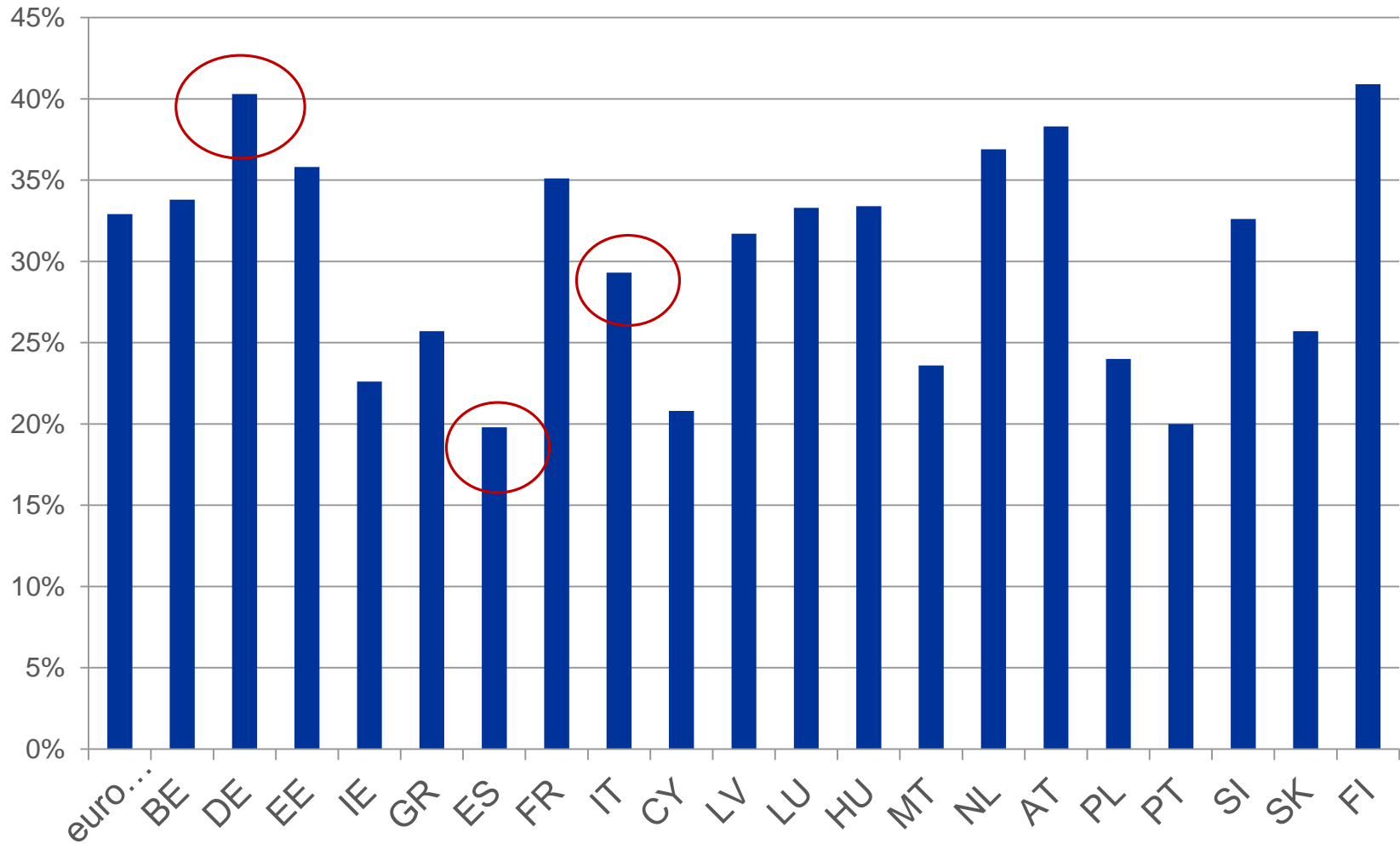
Household

- Wealth is measured at the **household** level
- Usually not possible to divide most of household wealth among household members
- Equivalence scales ('per consumption unit') used in income, not in wealth statistics
- However: Average household size matters in cross-country comparisons of household wealth

Median net wealth by household size



Share of one-person households

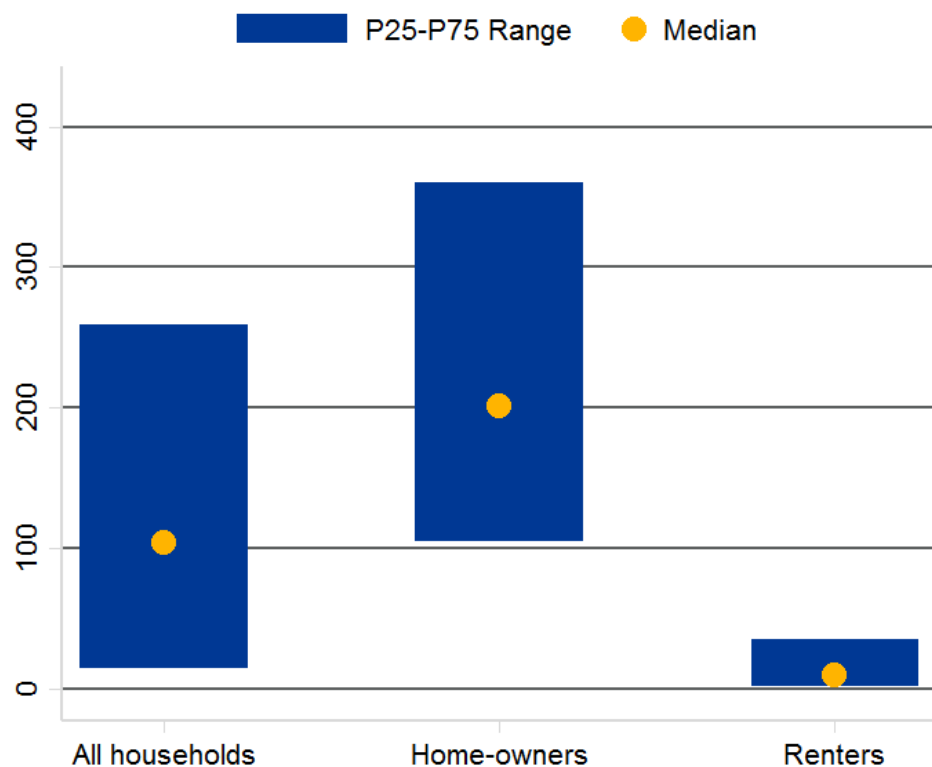


Homeownership rate

- The **Household Main Residence (HMR)** is by far the most important asset of the household sector
 - Approximately **50%** of household wealth in the euro area is in the value of the HMR
- **Additional measurement issue:** the value of HMR is relatively well captured in surveys, but the value of financial wealth and other real estate wealth is sometimes significantly underreported
 - Households know the value of the HMR, not of financial assets
 - Wealthiest households missing from the data own a small share of total HMRs, but a large share of total shares and businesses
- Homeownership rates explain a large share of cross-country variability in median net wealth

Wealth heterogeneity persists across homeownership status

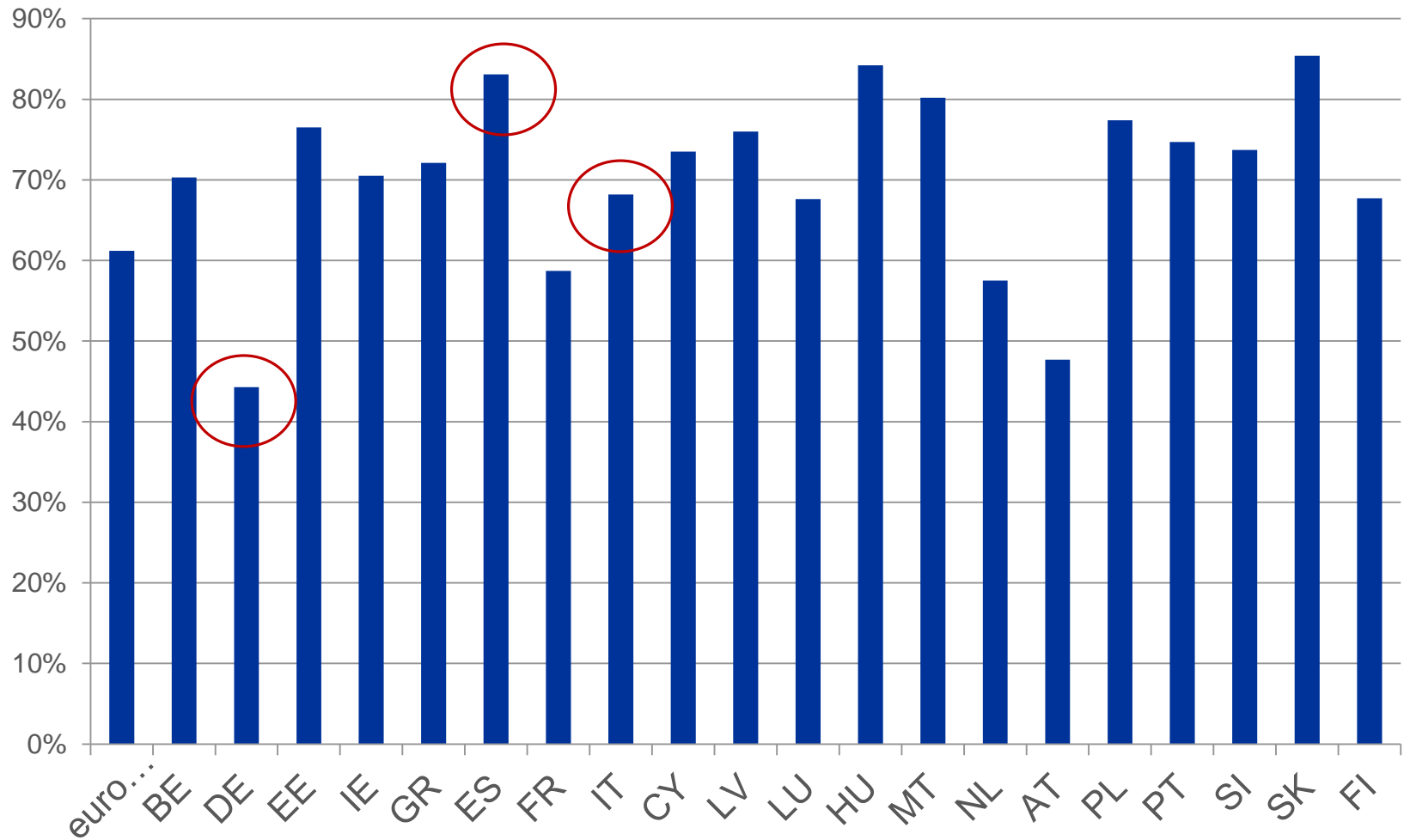
Distribution of Net Wealth by Homeownership Status
(EUR thousands)



Home-owners hold more net wealth than renters

Results stable across waves

Homeownership rate by country

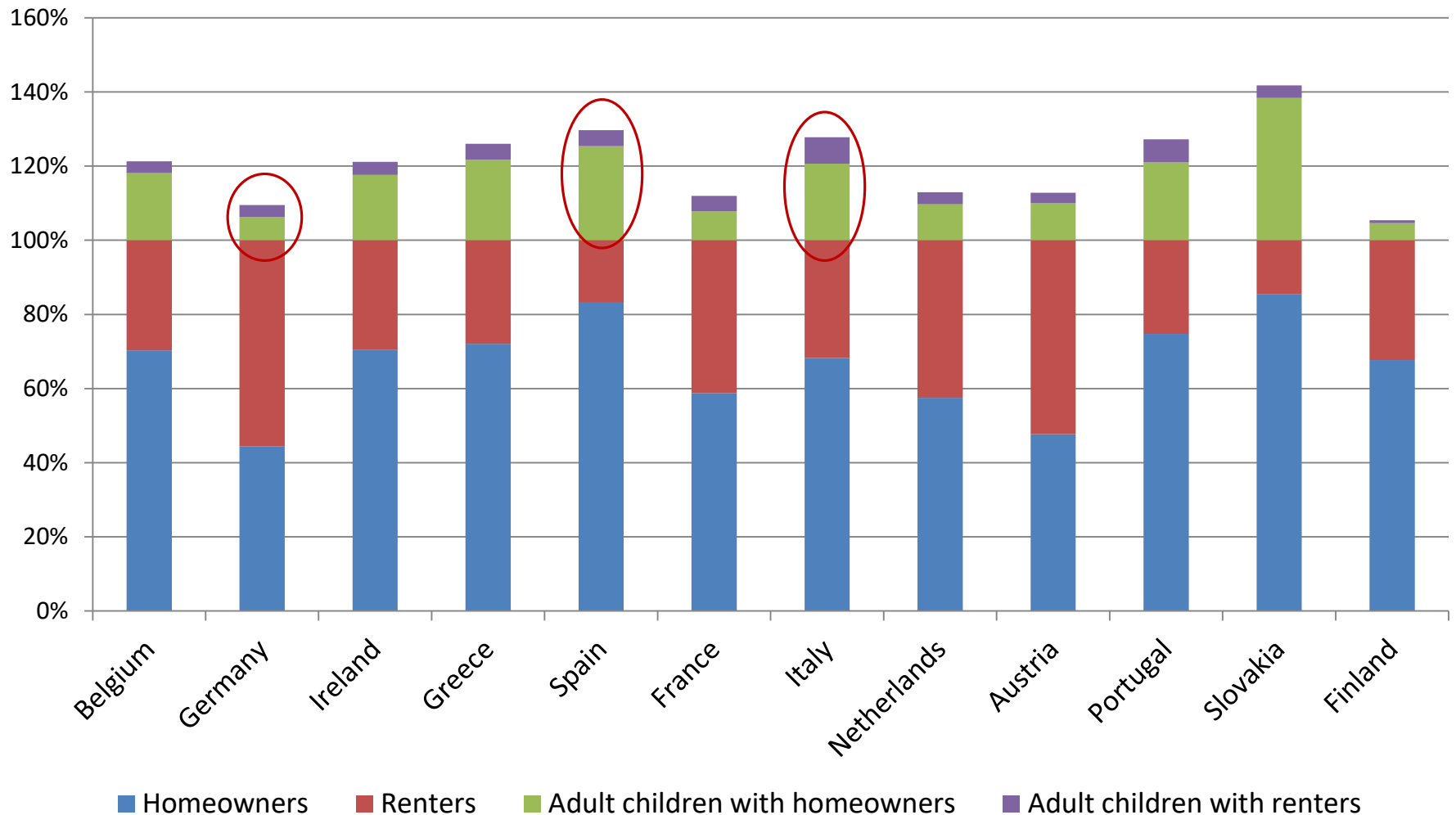


Explaining differences in household size and homeownership

- In Central and Northern Europe children move out of their parents' house earlier than in Southern and Eastern Europe
- Young people who have just moved out more probably live **alone** and are more probably **renters**
- Larger average household size and homeownership rate in Southern and Eastern Europe
- Example:
 - Spain: 17.5 million households, 5.1 million adults (>18) living with parents
 - Italy: 24.7 million households, 6.9 million adults living with parents
 - Germany: 39.7 million households, 3.8 million adults living with parents
 - Ratio of adults living with parents to number of households is lowest in Finland (5%) and highest in Slovakia (42%)

4. Interpretation of results

Homeowners, renters and adults living with parents, number of households = 100%



Where to find more information?

https://www.ecb.europa.eu/pub/economic-research/research-networks/html/researcher_hfcn.en.html

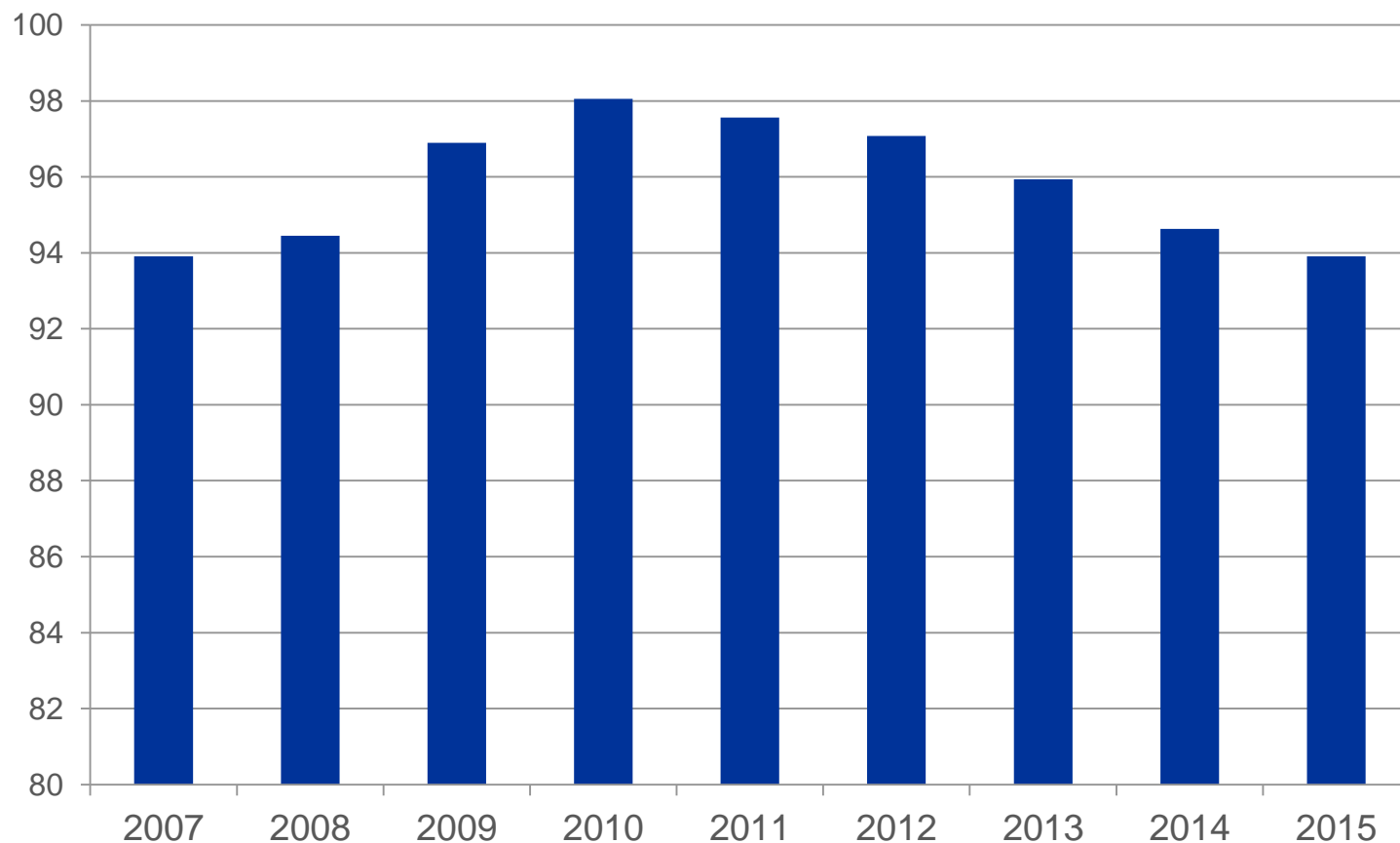
- HFCS web page that includes
 - Analytical reports of the results
 - Methodological reports
 - List of output variables
 - Other methodological and implementation documents
- Any questions can be addressed to
- Juha.honkkila@ecb.int
- HFCS@ecb.int

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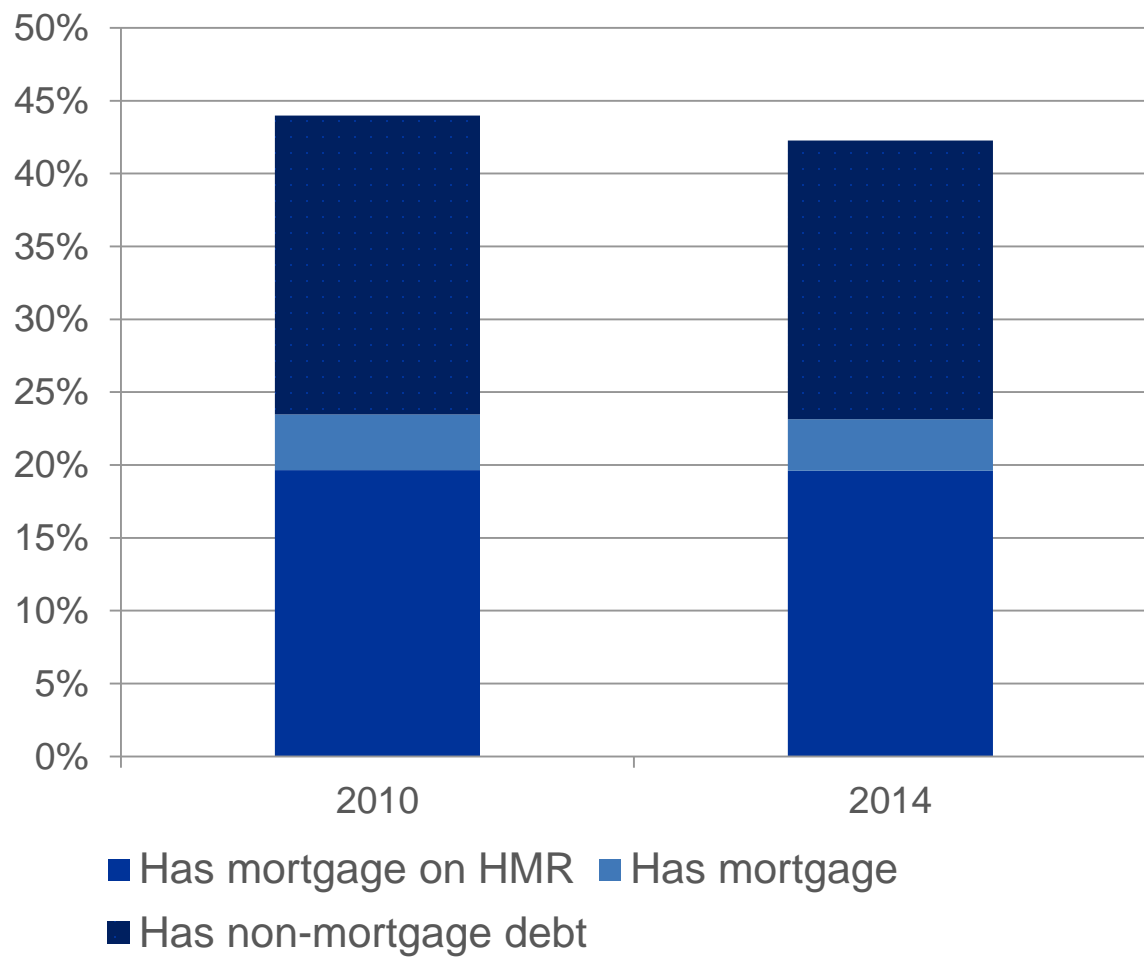
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What was the impact of the crisis on household debt burden?

Debt-to-income ratio of euro area households – macro data (Eurostat)

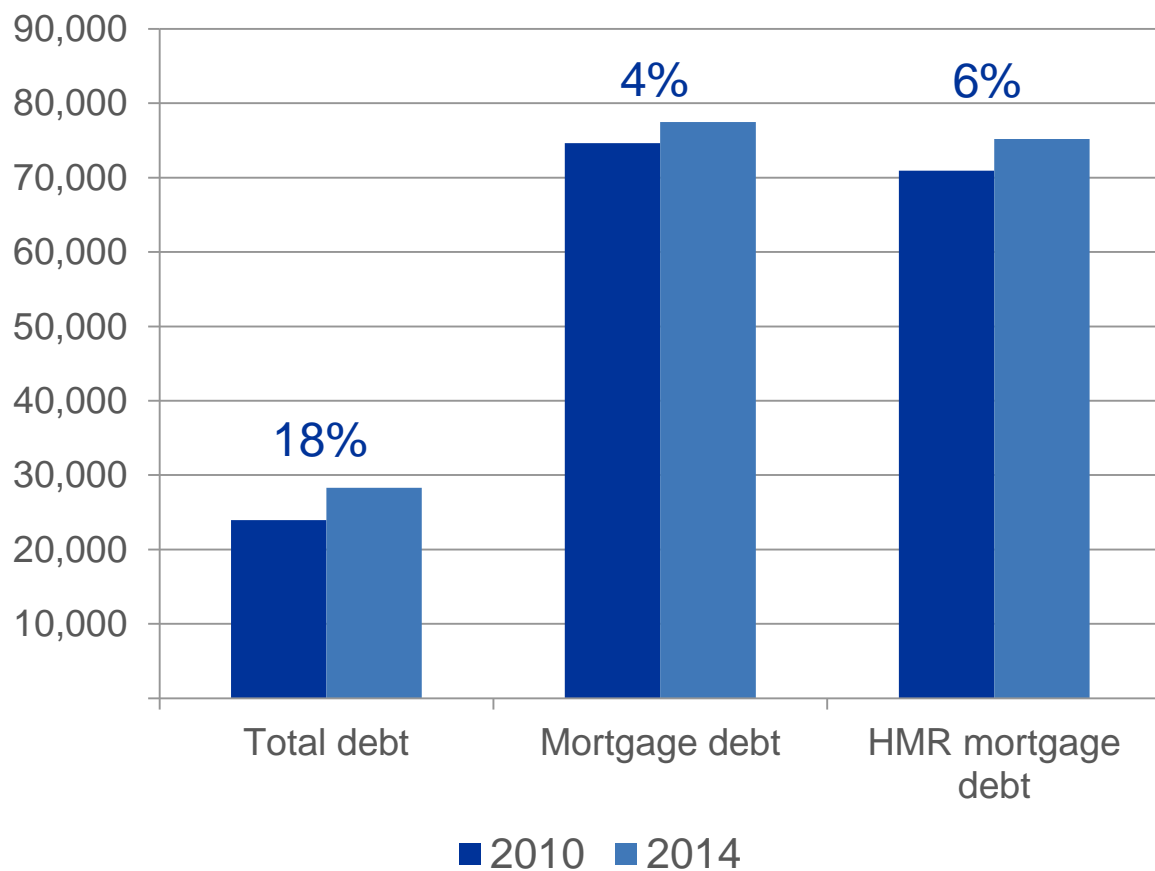


Micro aspect: Share of indebted households (HFCS)



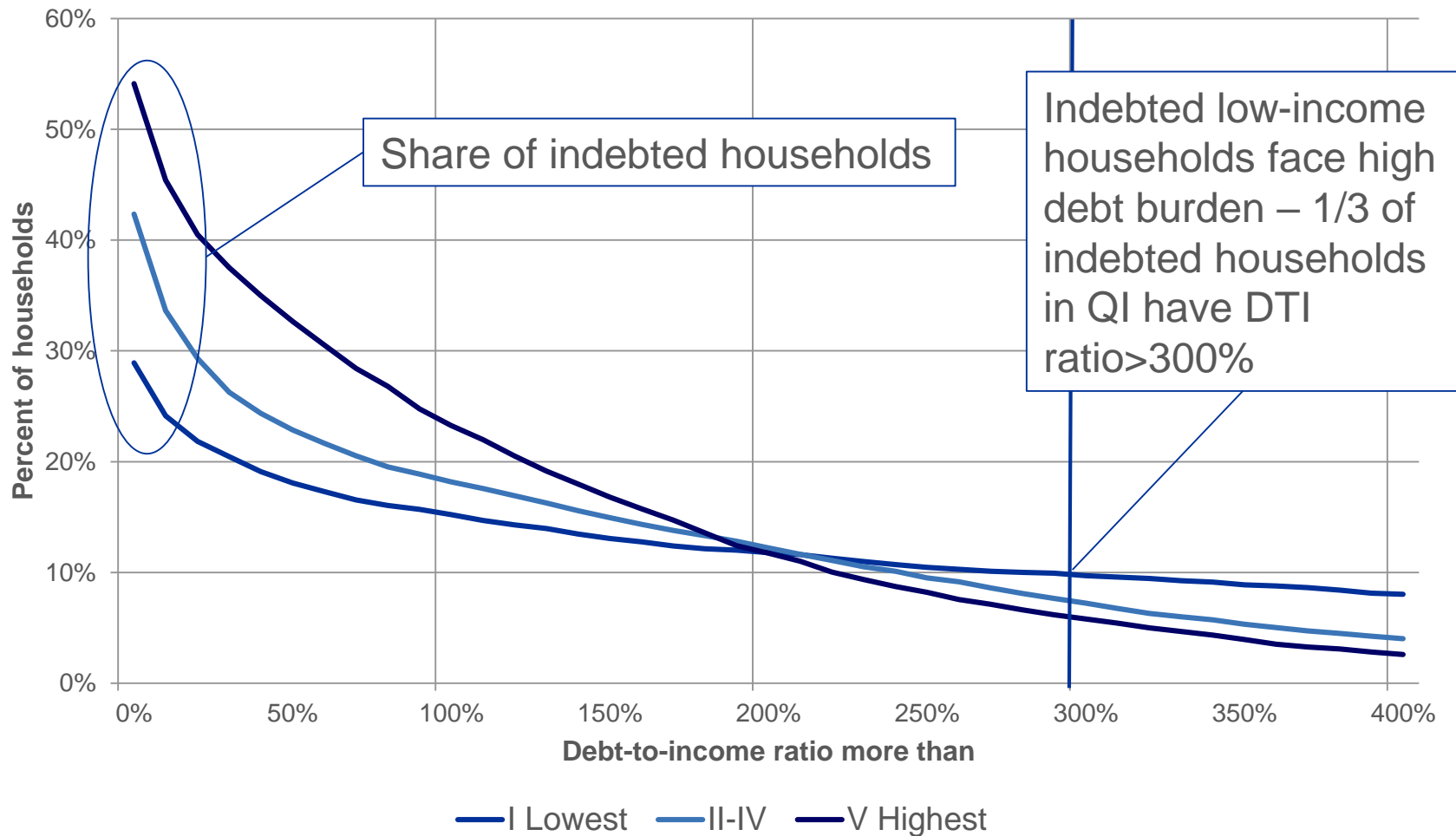
- **Decline** in debt participation
- From 44% to 42%
 - Mainly due to participation in **non-mortgage** debt
- 4.2 Mio households less that are indebted

Conditional medians of outstanding debt, EUR

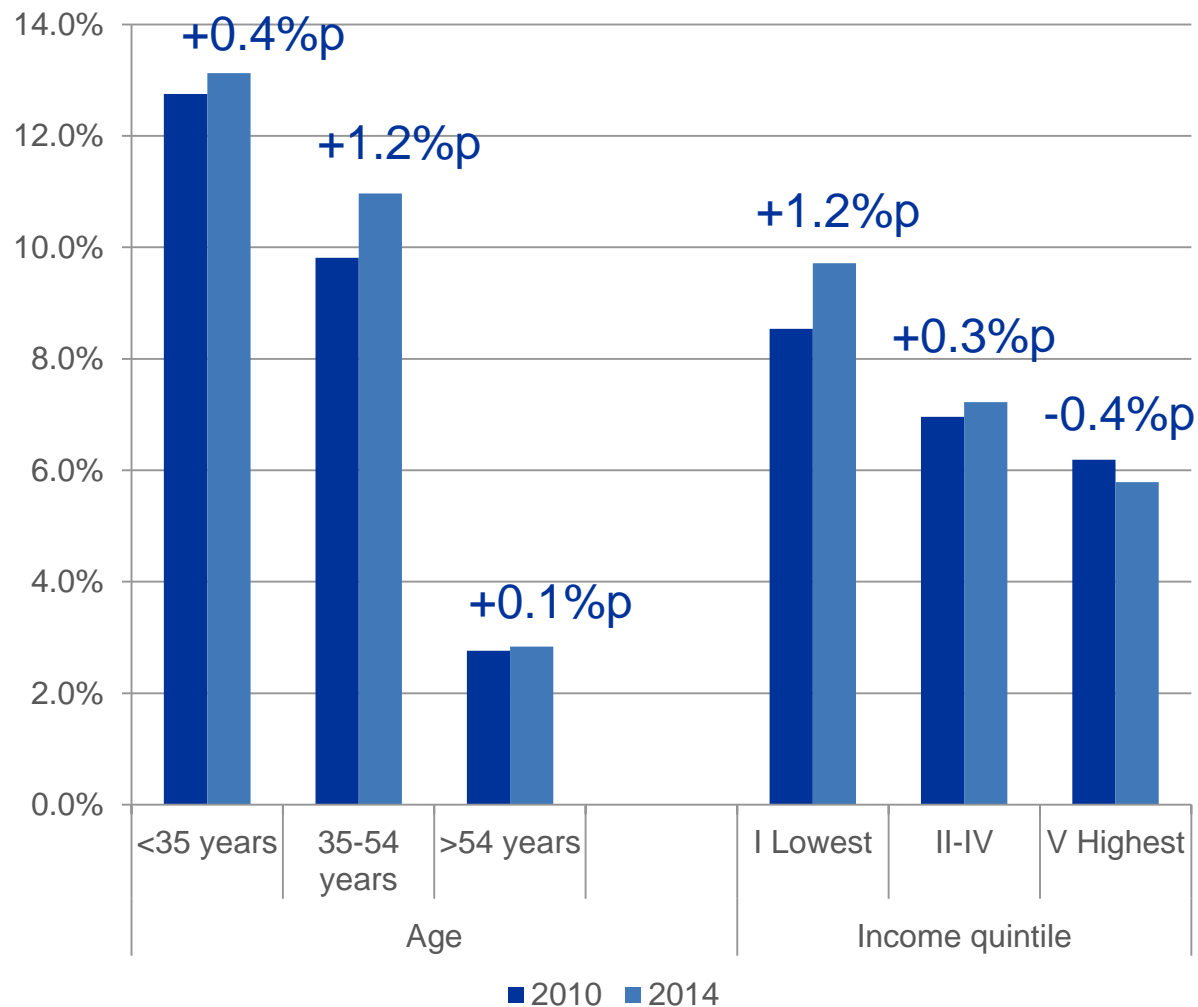


- For indebted households, the median debt has increased significantly between 2010 and 2014
 - HMR = Household Main Residence

Debt-to-income ratio by income quintile (2014)



Share of households with DTI ratio over 300%



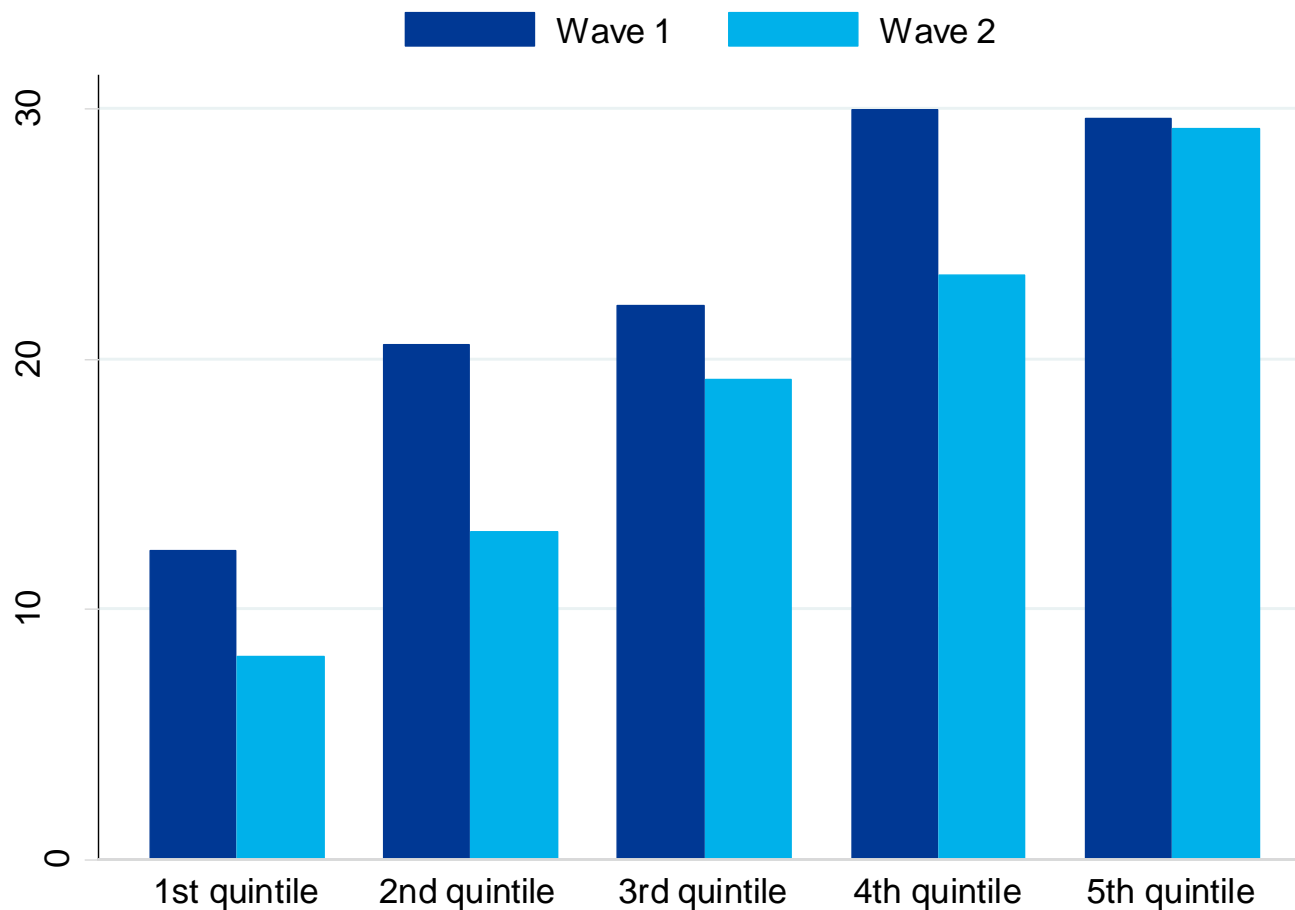
- 2010-2014: Increase of 0.3%-points (650,000 households) with DTI ratio > 300%
- Low income households most affected
- For high income households decrease in debt burden

Thank you for your attention!

Reserve slides

Credit constraints – fewer HHs applied for credit

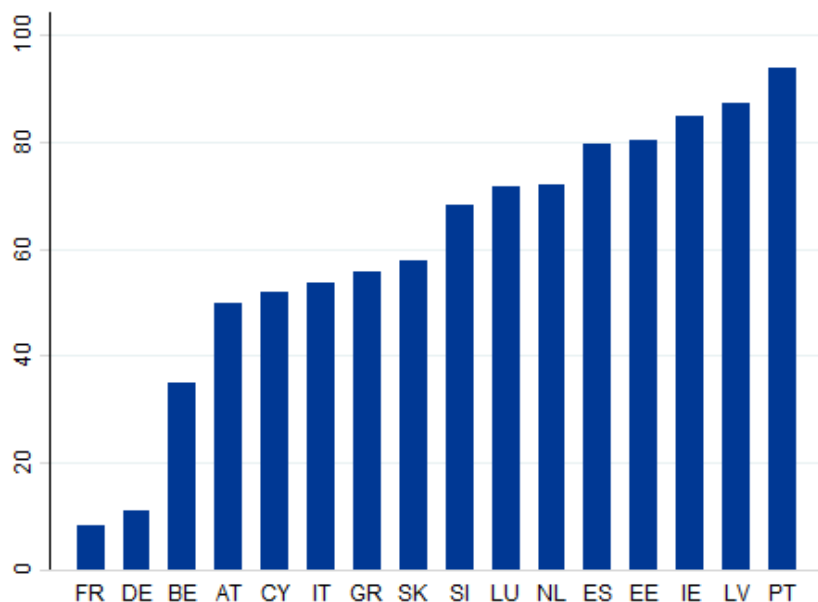
Share of HHs which Applied for Credit by Income Quintile (%)



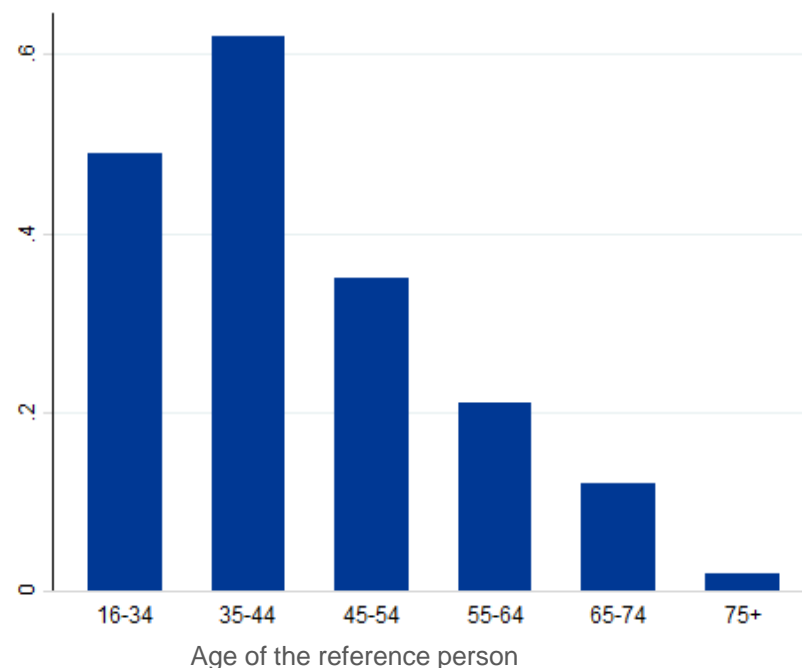
Application 1: Effects of interest rate changes on debt service-income ratios

- For households with adjustable-rate mortgages, we can compute the impact of change in key ECB rates on mortgage payments.
- Young adults aged 35-44 would experience the biggest impact – hold bulk of mortgage debt

Share of adjustable-rate mortgages (percent)

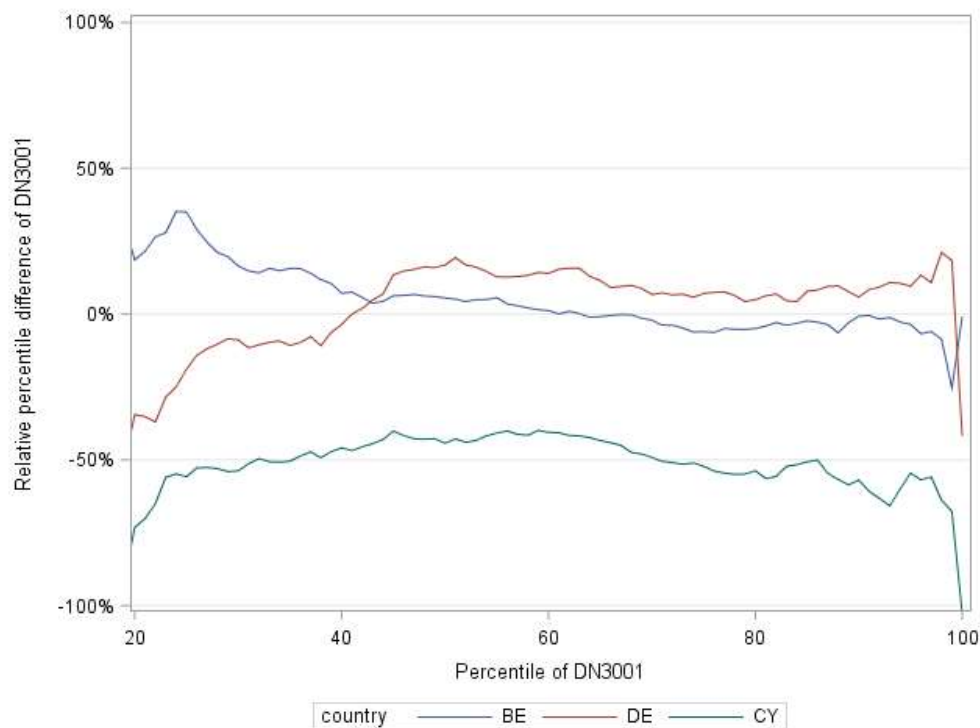


Effect of 100 bp increase in interest rates on **mean** DSI ratio (percent of income)



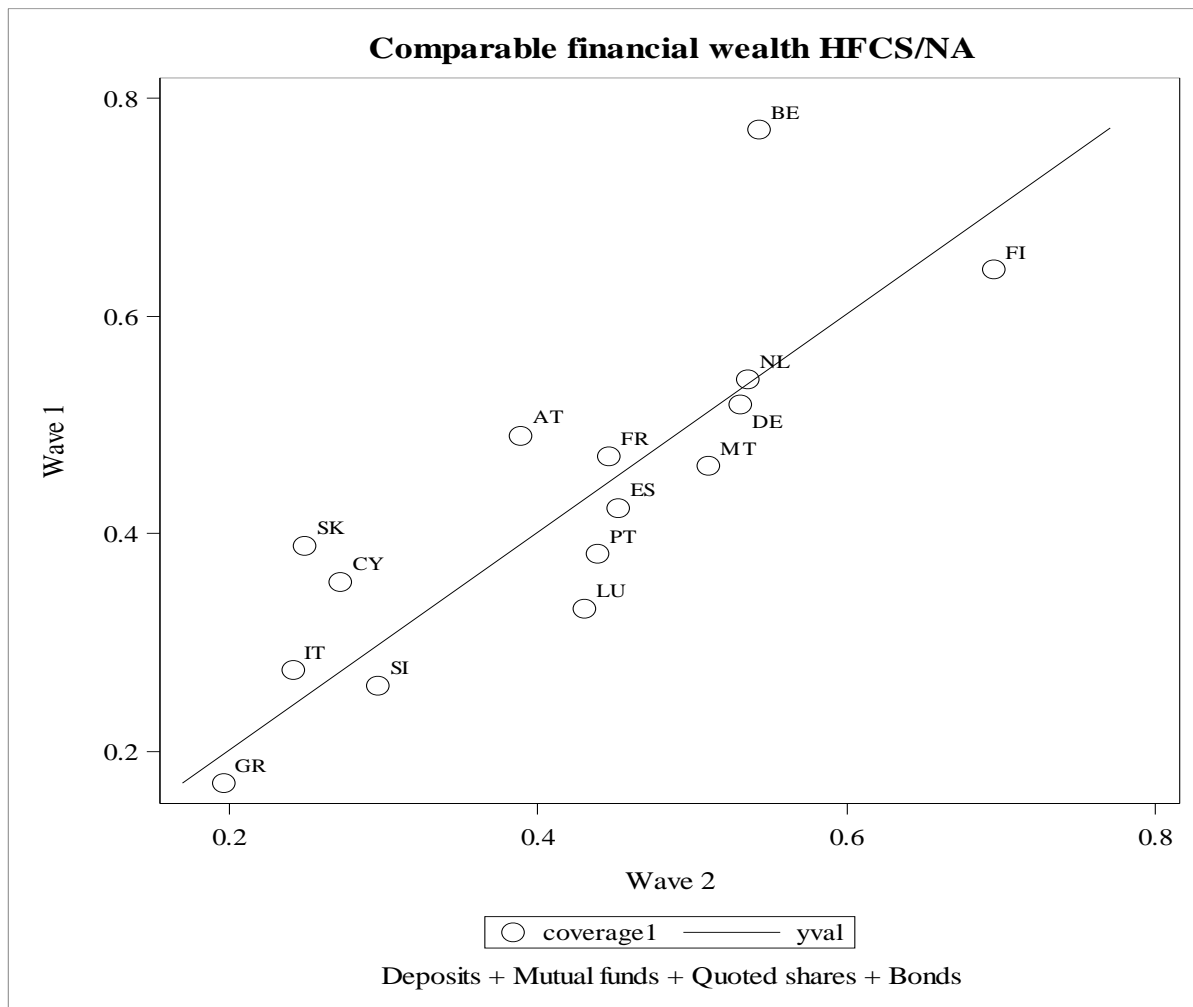
Household wealth changed differently along the distribution

- **Belgium**
 - **Wealth** increased in the **lower** part of the distribution and decreased at the **top**
 - **Decrease in inequality** for most indicators
- **Germany**
 - **Wealth** decreased in the **lower** part of the distribution
 - **Increase in inequality** for indicators more sensitive to lower parts of the distribution (Gini, Atkinson(1))
- **Cyprus**
 - **Wealth** decreased in the **entire** the distribution
 - Mixed results on **inequality**



Comparison with National accounts for comparable financial wealth

- Coherence with macro sources on individual assets may be hard to achieve
- Adding up comparable items (deposits + quoted shares + mutual funds + bonds) gives a pretty reliable picture at least on **changes between waves**



Heterogeneity across households exceeds heterogeneity across countries

Much overlap in the middle ranges (P25-P75)

Distribution of Net Wealth per Household by Country (EUR Thousands)

