



Comparing poverty estimates using income, expenditure and material deprivation

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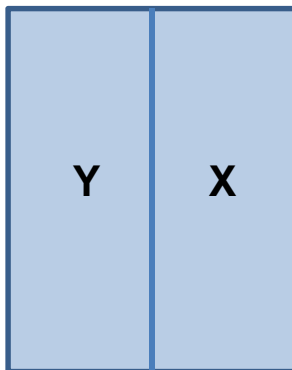
Background

- Europe 2020 social inclusion target measured using EU-SILC indicators on:
 - work attachment
 - income poverty
 - material deprivation
- Argument that household expenditure may be better indicator of economic well-being
- Aim therefore to:
 - Estimate measures of expenditure poverty for range of European countries – Belgium, Germany, Spain, Austria, Finland & UK
 - Compare income, expenditure and material based measures of poverty across these countries

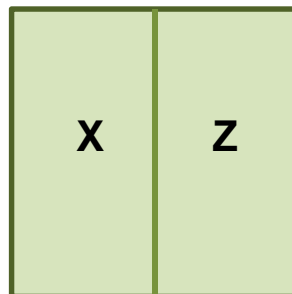
Statistical Matching: overview

- No single data source provides joint information on income, expenditure and material deprivation
- Solution - statistical matching of HBS expenditure variables onto EU-SILC

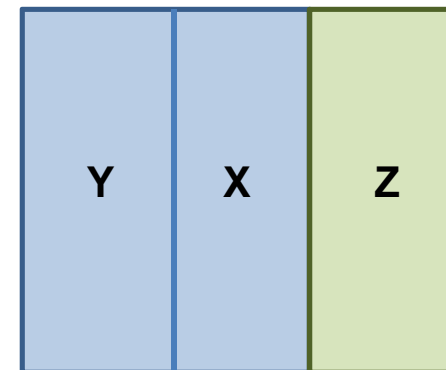
Recipient dataset (EU-SILC)



Donor dataset (HBS)



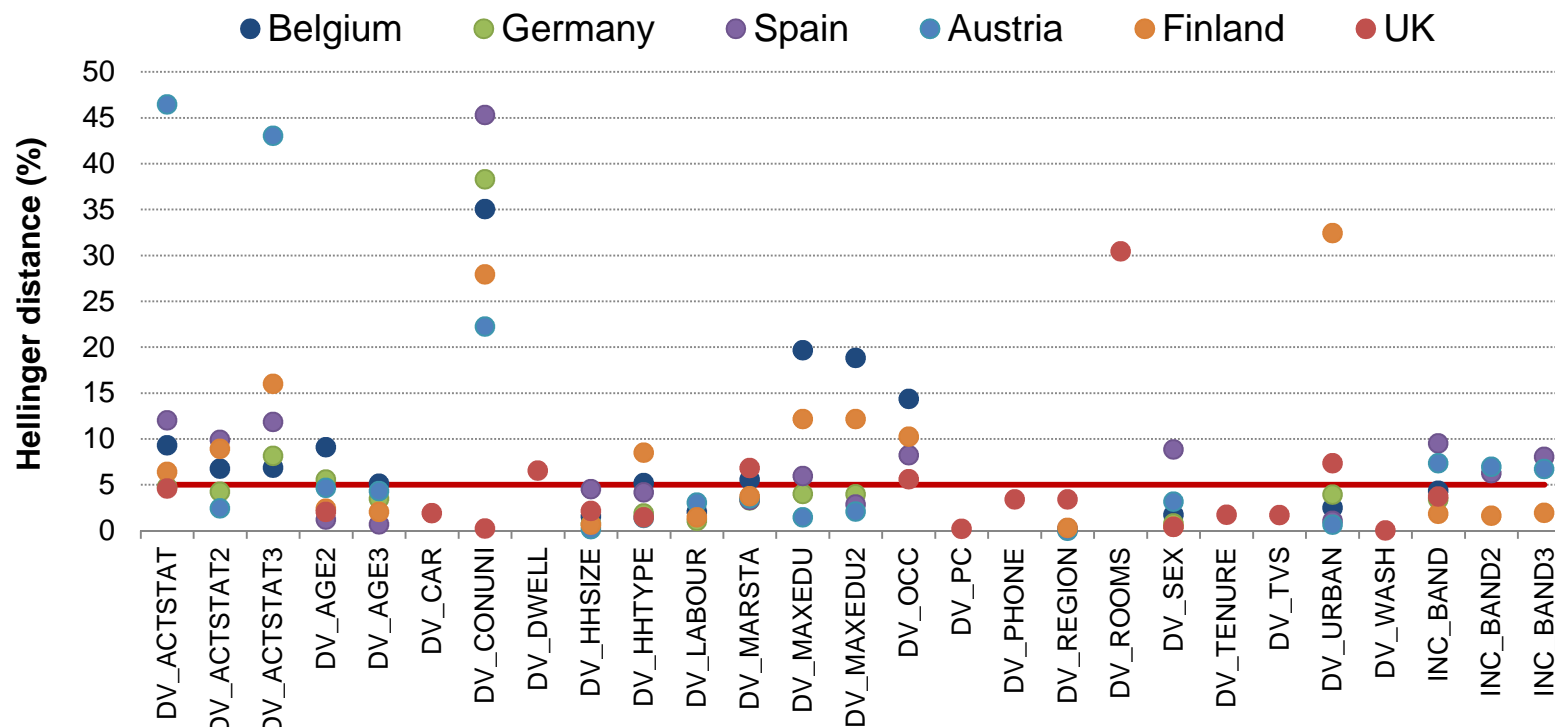
Matched dataset



Statistical Matching: Choosing the matching variables

Matching variables need to have similar distributions across the two datasets:

- this was assessed using the Hellinger Distance with 5% cut-off
- variables recoded to harmonise distributions, e.g. activity status



Statistical Matching: Choosing the matching variables

- Need matching variables to be predictors of both mat dep and expenditure
 - Examined using multiple linear and logistic regression models

Final matching variables:

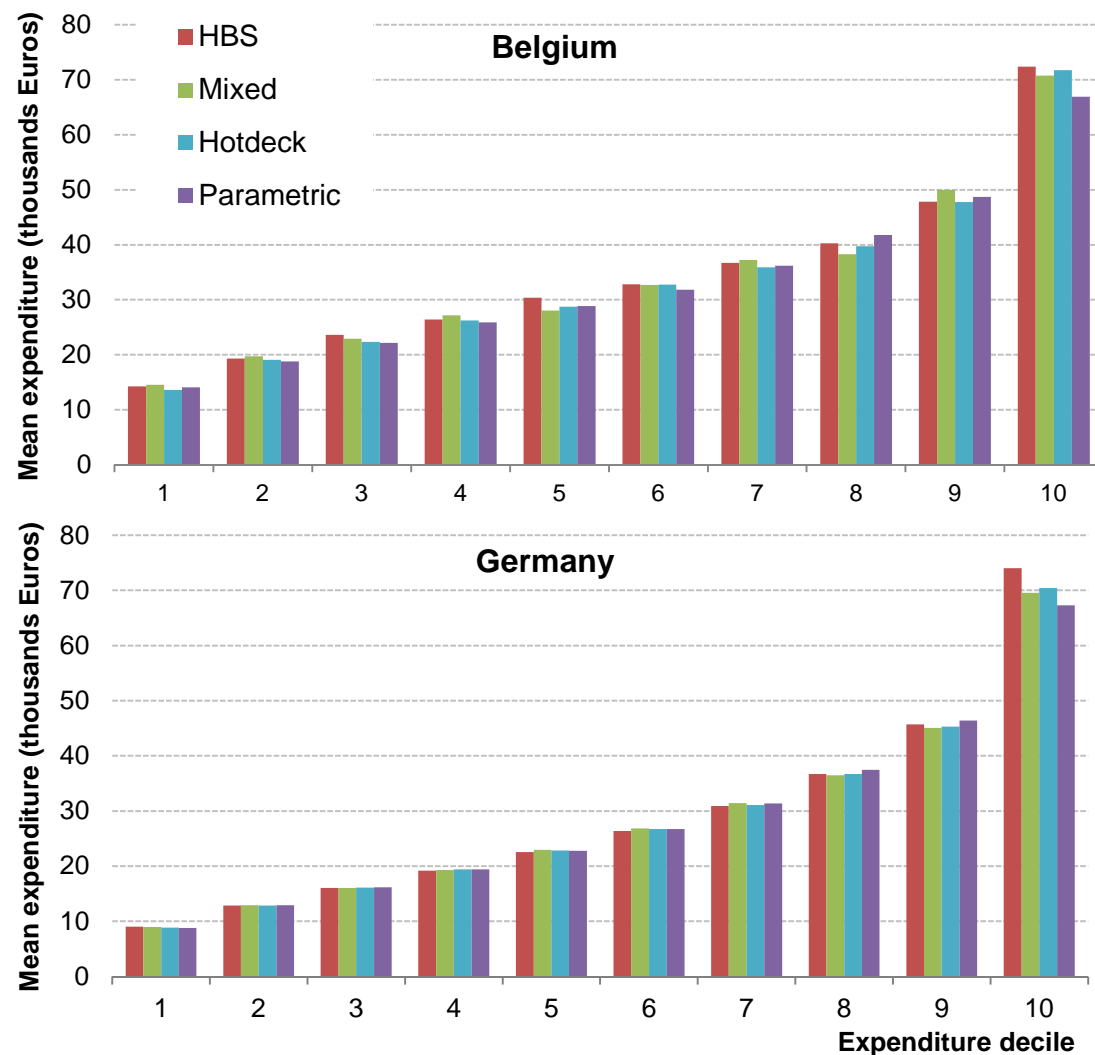
VARIABLE	BELGIUM	GERMANY	SPAIN	AUSTRIA	FINLAND	UK
AGE	•	•	•	•	•	•
REGION			•			•
LEVEL OF URBANISATION				•		
HOUSEHOLD SIZE	•	•	•	•	•	
HOUSEHOLD TYPE	•		•			
TENURE STATUS						•
MARITAL STATUS	•	•	•	•	•	
CONSENSUAL UNION						•
TYPE OF LABOUR CONTRACT		•				
HIGHEST EDUCATIONAL ATTAINMENT		•	•	•		
ACTIVITY STATUS	•	•		•	•	•
OCCUPATION						•
CAR OWNERSHIP						•
PC OWNERSHIP						•
INCOME BAND	•	•	•	•	•	•

Statistical Matching: methods

- Number of approaches to statistical matching
- 3 methods investigated:
 - Hotdeck (non-parametric)
 - Parametric
 - Mixed methods
- Various diagnostics were used to assess which method performed best

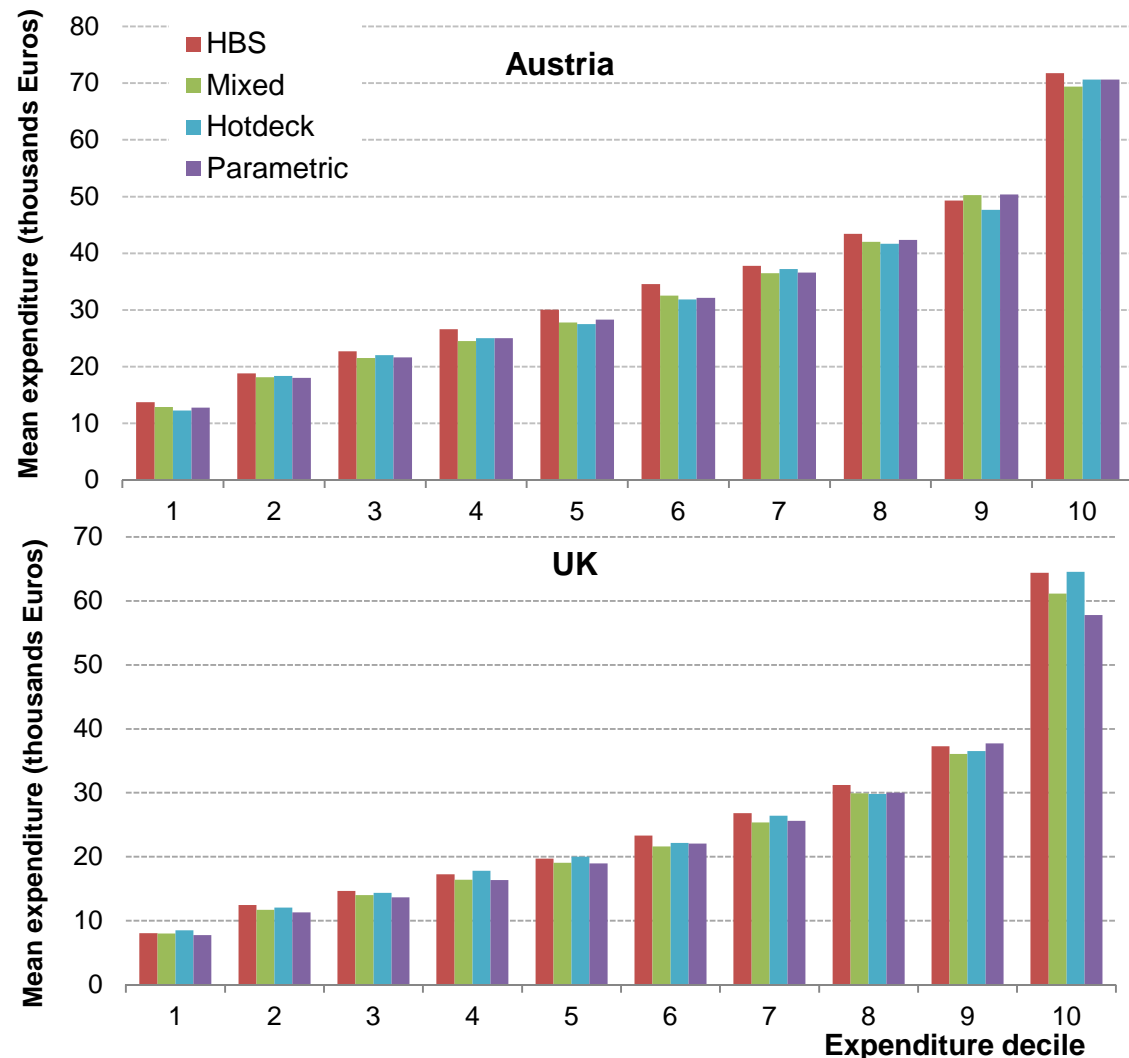
Results of statistical matching – mean expenditure by expenditure decile

- All three methods relatively effective in replicating mean expenditure by expenditure decile, particularly for Germany
- Some underestimation at the upper end of the distribution



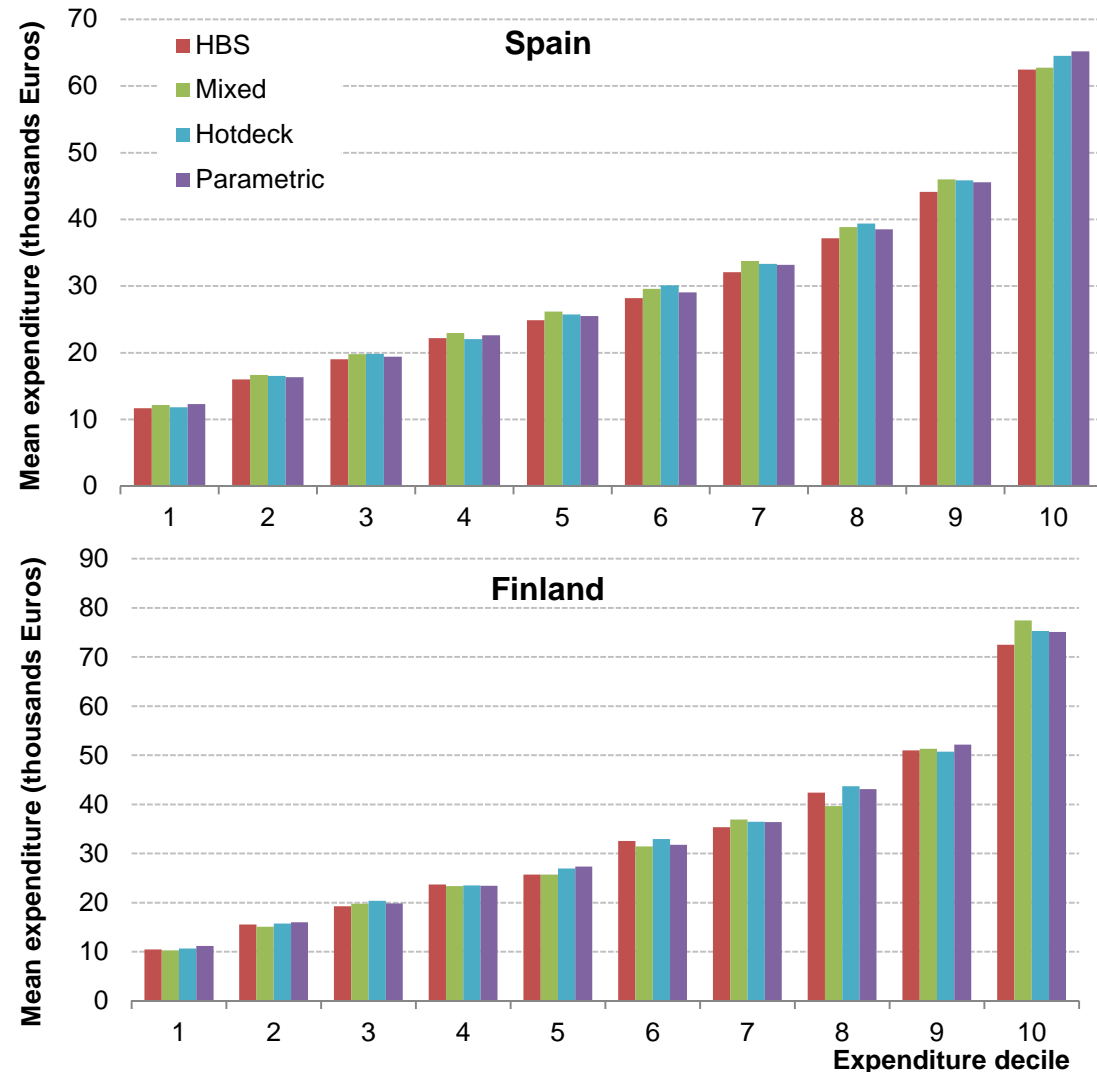
Results of statistical matching – mean expenditure by expenditure decile

- Again no clear winner in terms of replicating the HBS distribution
- For Austria and the UK there was some underestimation throughout the expenditure distribution

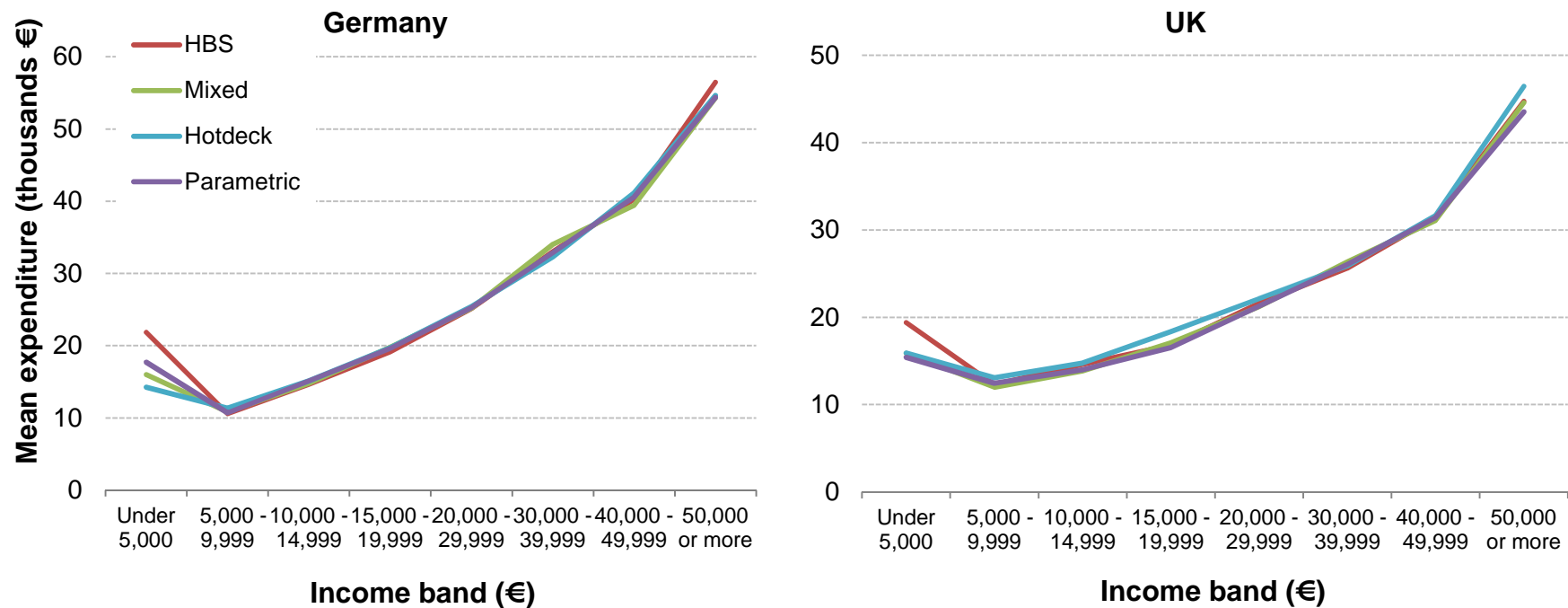


Results of statistical matching – mean expenditure by expenditure decile

- Some overestimation across the distribution, particularly for Spain
- As before, none of the methods is better across the entire distribution than the others

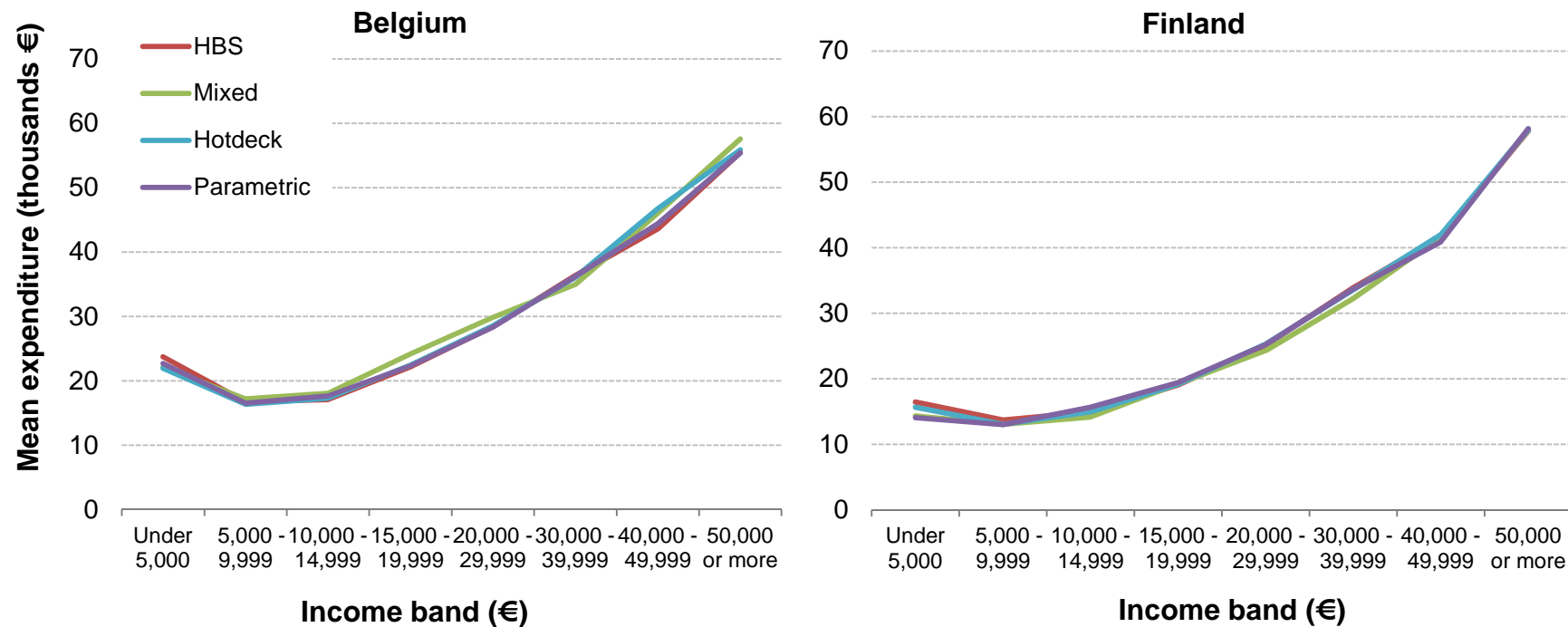


Results of statistical matching – mean expenditure by income band



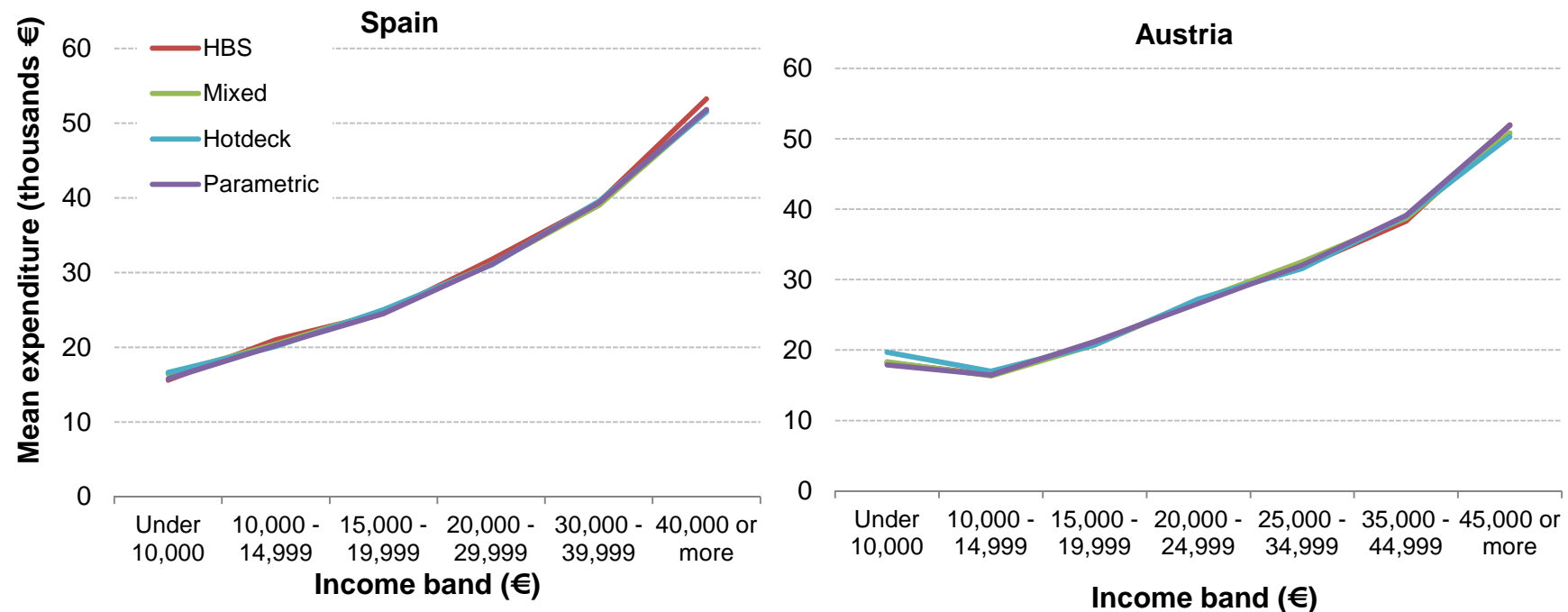
- All three methods effective at replicating distribution of expenditure by income band
- Expected expenditure 'tick' present but for Germany and UK it is underestimated in matched data

Results of statistical matching – mean expenditure by income band



- Effective replication of expenditure across entire distribution
- Expected expenditure 'tick' clear for Belgium but less evident for Finland

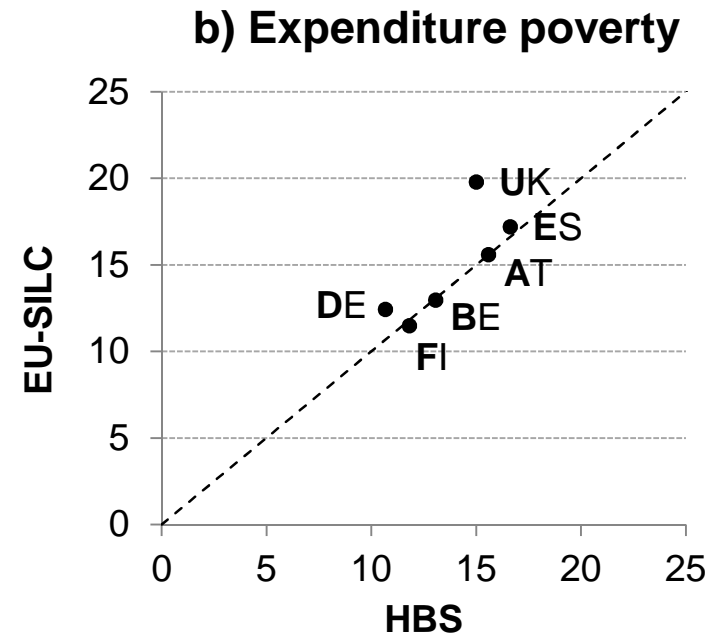
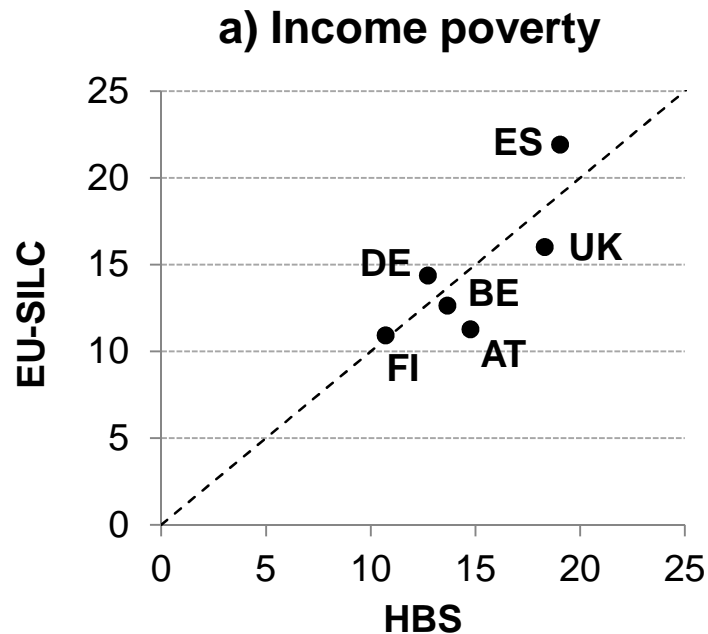
Results of statistical matching – mean expenditure by income band



- Similarly effective replication across the distribution
- No expenditure tick evident for Spain – but income banded differently to harmonise variables effectively between datasets

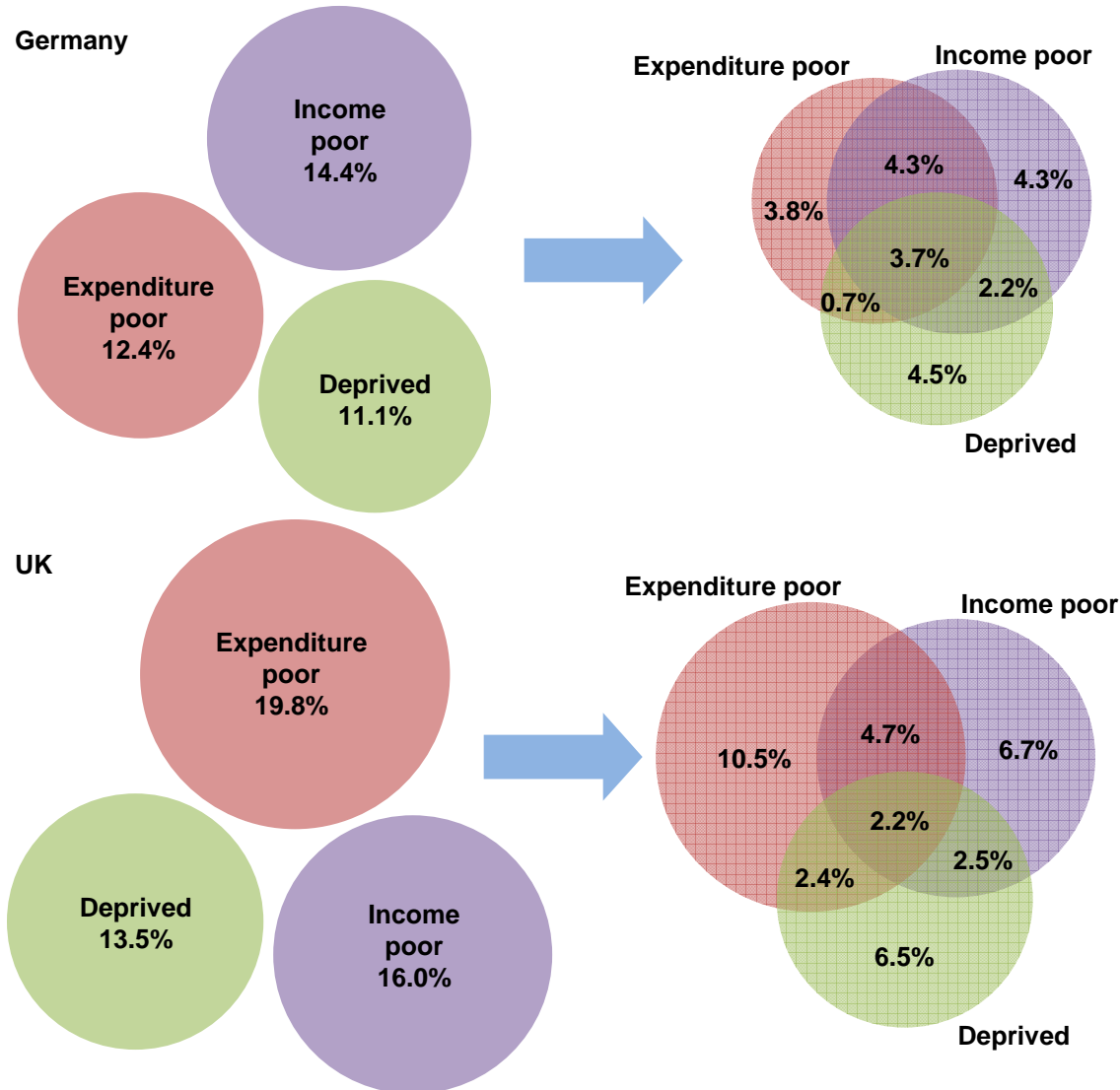
Income and expenditure poverty analysis

- No matching method consistently better than others
- Mixed methods taken forward - broadly more effective overall



- Expenditure poverty < 60% equivalised national median

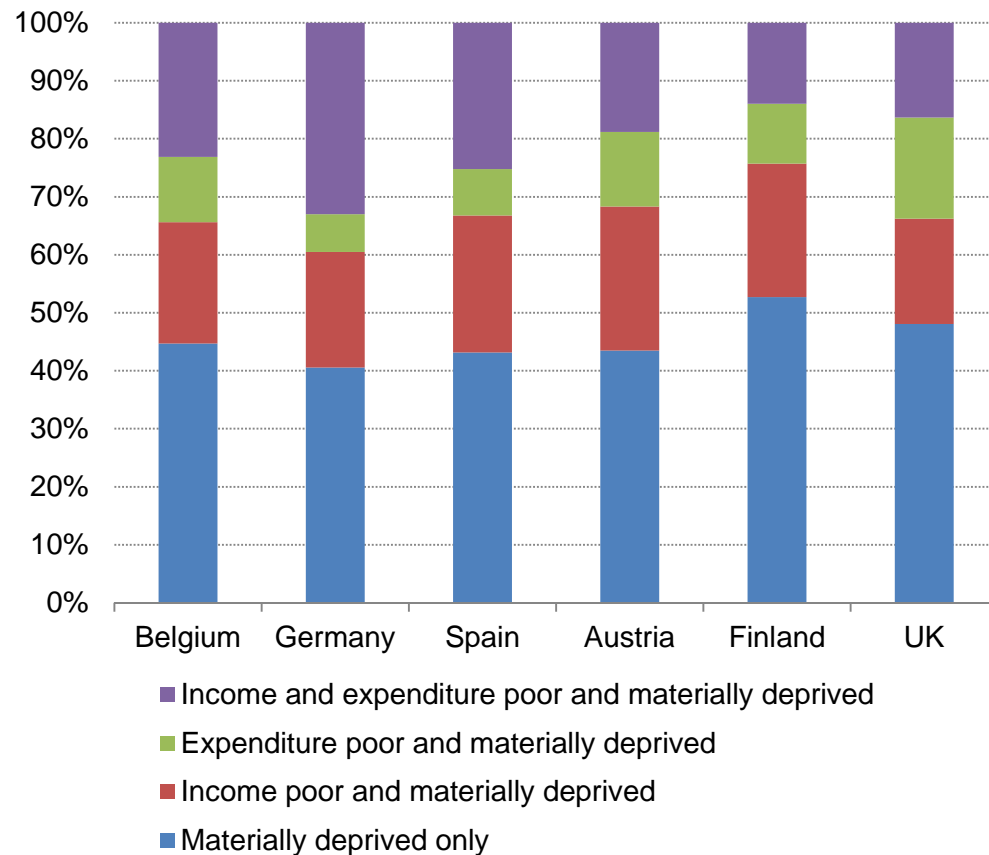
Comparison of poverty measures: population breakdown by poverty status



- Degree of overlap high relative to the proportion experiencing at least one form of poverty in Germany
- Relatively low levels of overlap between measures in UK
- Greater overlap of material deprivation with income poverty than expenditure poverty

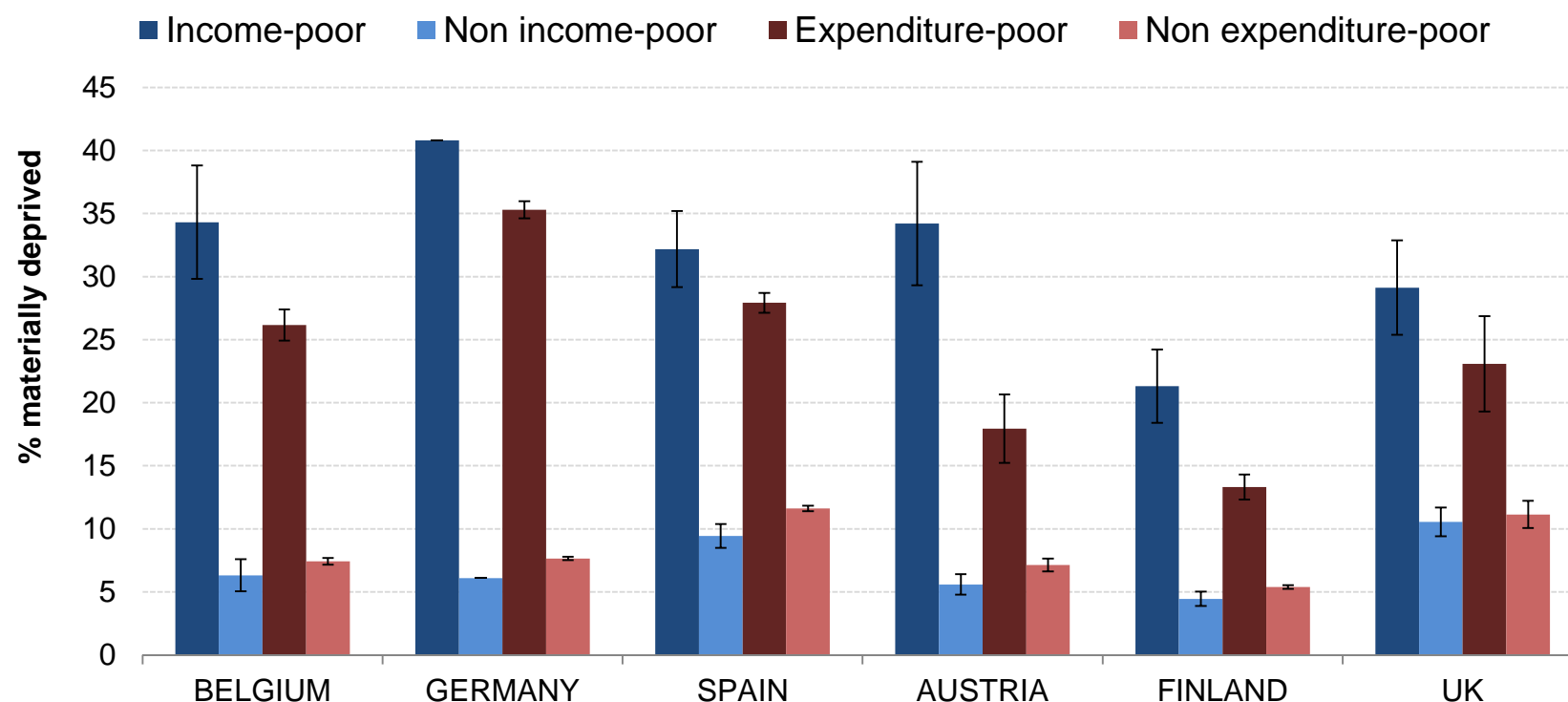
Material deprivation: overlap with other measures of poverty

Percentage of materially deprived individuals experiencing other forms of poverty, 2010



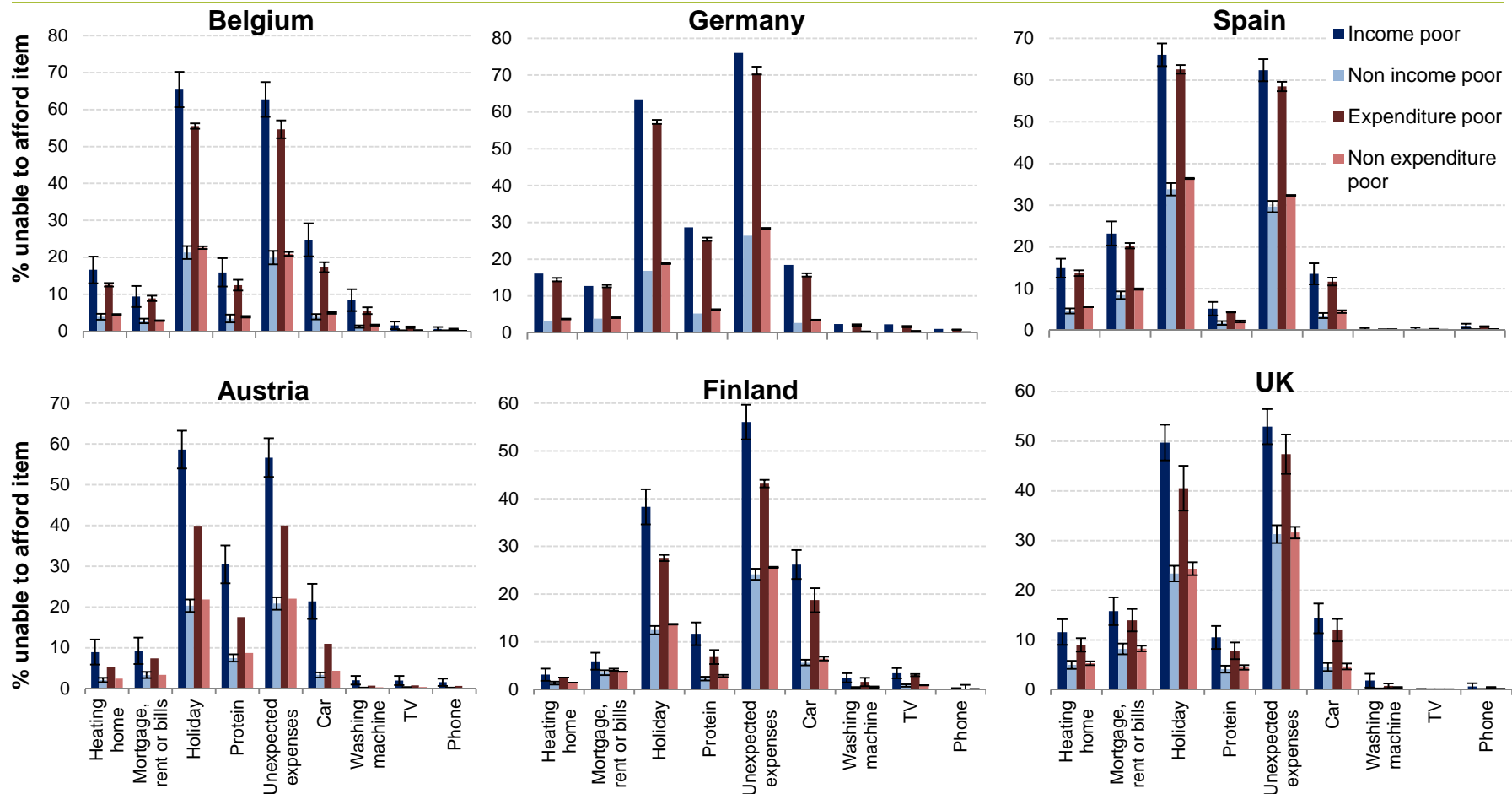
- In Finland over half are materially deprived only
- Of those that are materially deprived:
 - 24% (Finland) to 39% (Germany) are also expenditure poor
 - 34% (UK) to 53% (Germany) are also income poor

Material deprivation by poverty status



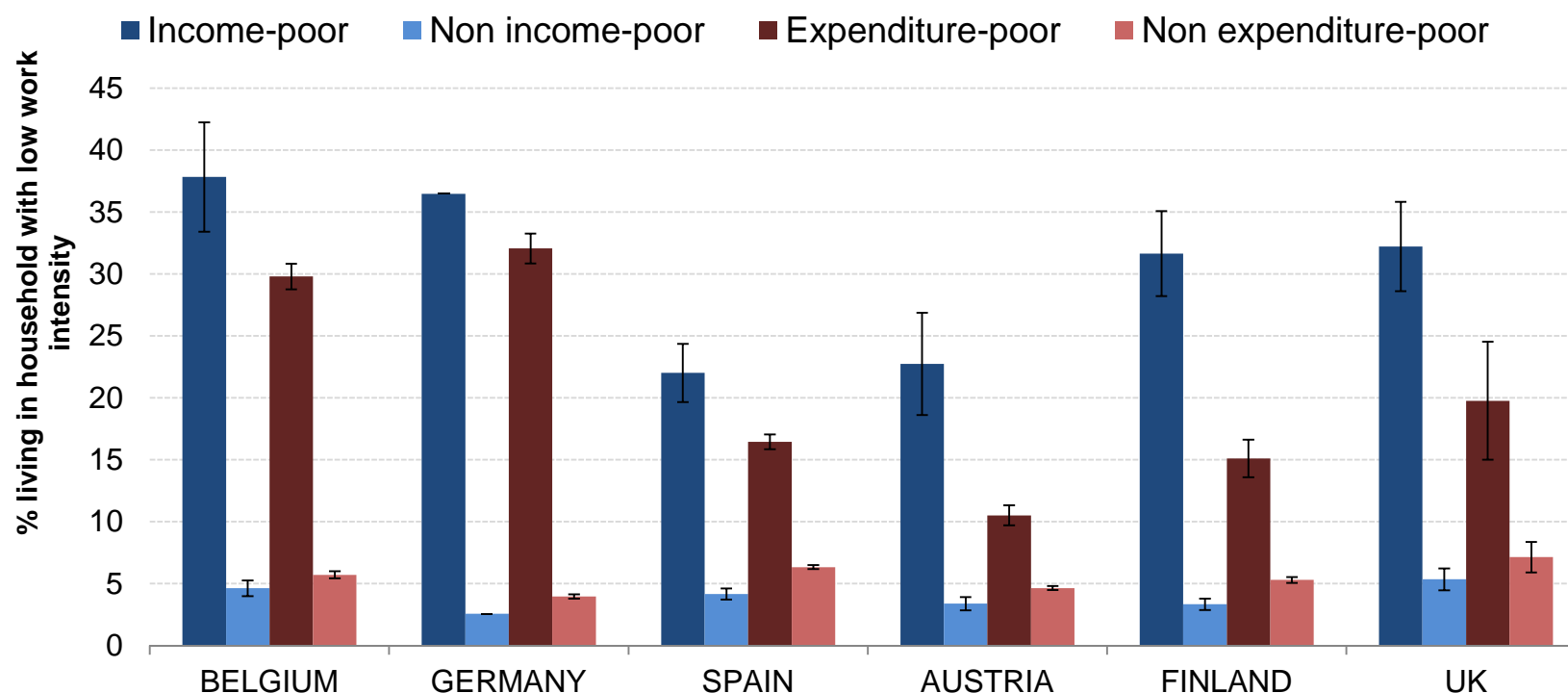
- Material deprivation has a stronger relationship with income poverty than with expenditure poverty, particularly in Austria
- The relationship with expenditure poverty is stronger in Belgium, Germany and Spain than Austria, Finland and UK

Inability to afford deprivation items by poverty status



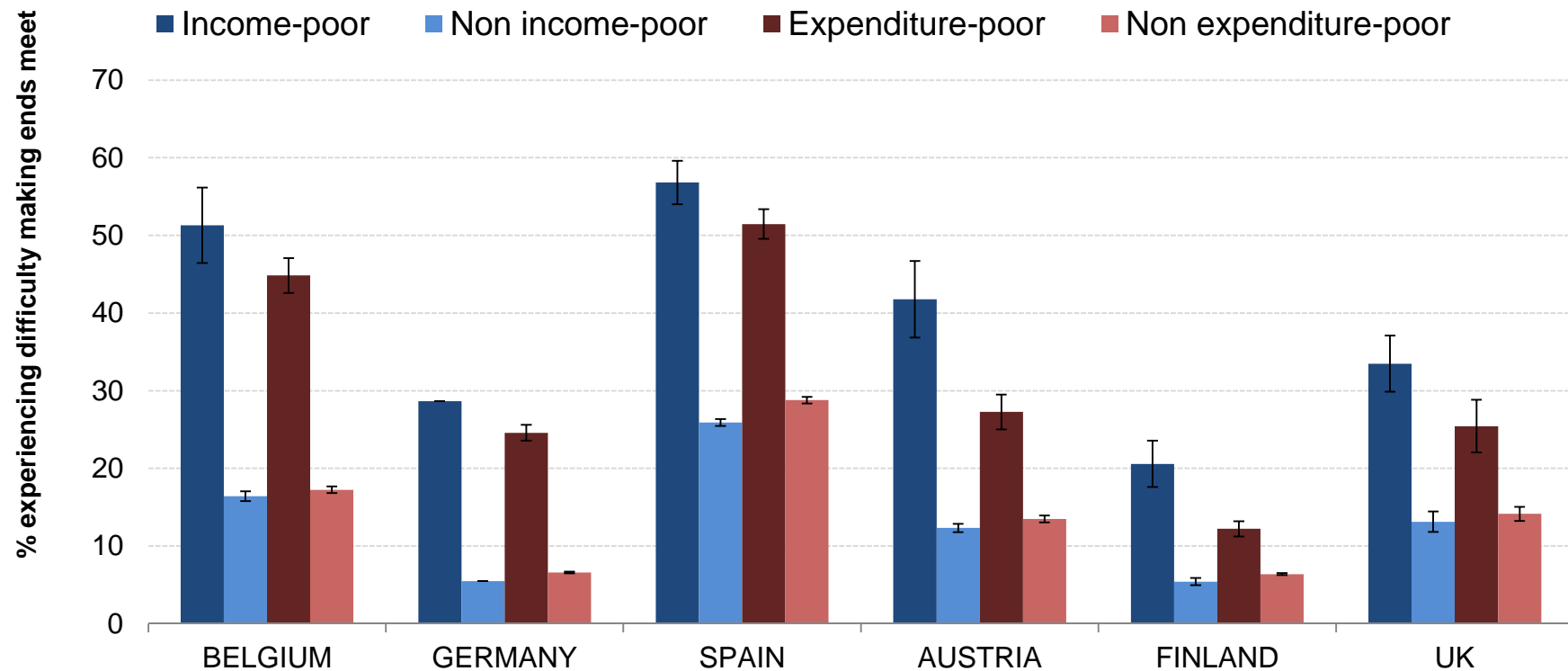
- When considering individual items of deprivation, similar patterns are seen to the overall deprivation measure

Low work intensity by poverty status



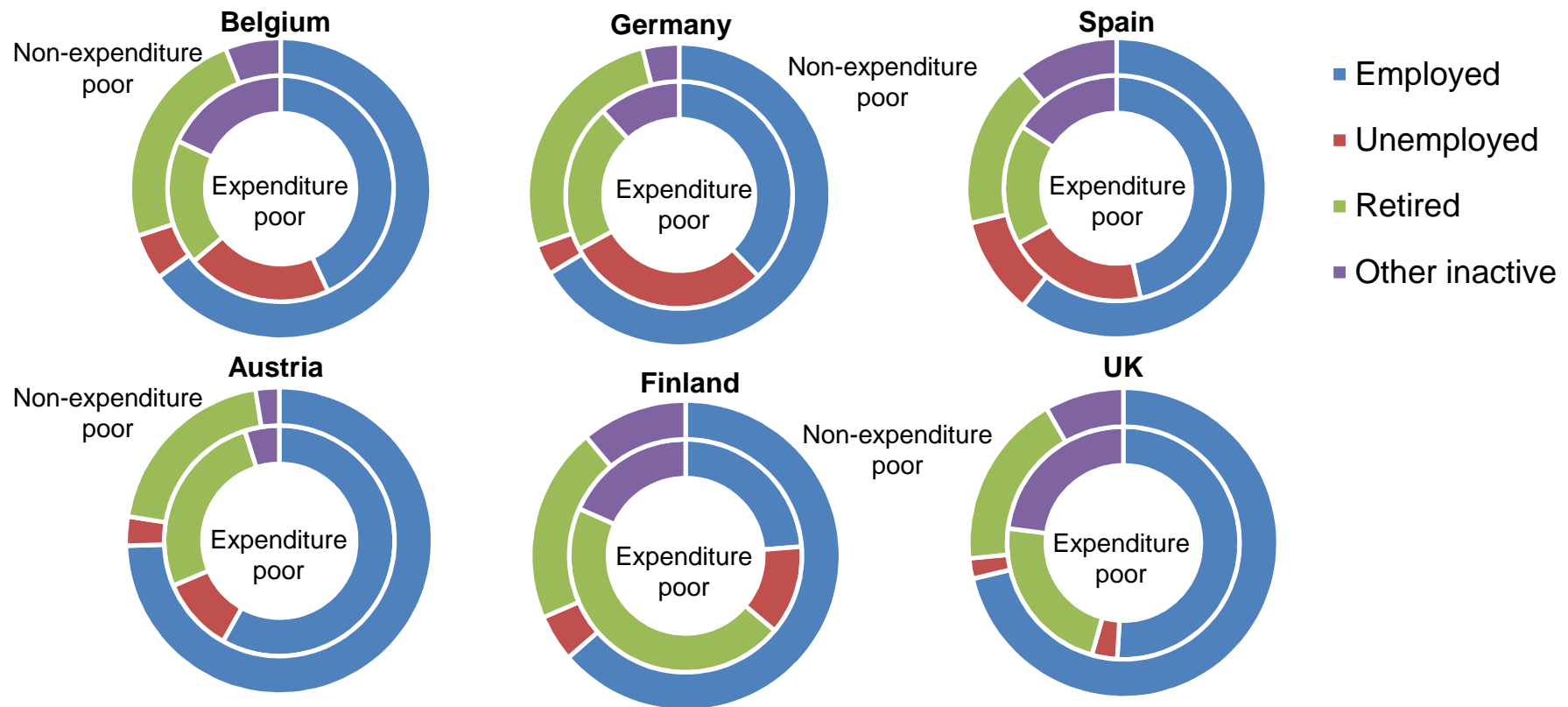
- Defined as living in a household where adults work < 20% of their full capacity
- Similar pattern is seen when considering low work intensity as with deprivation – but generally stronger relationship

Difficulty making ends meet by poverty status



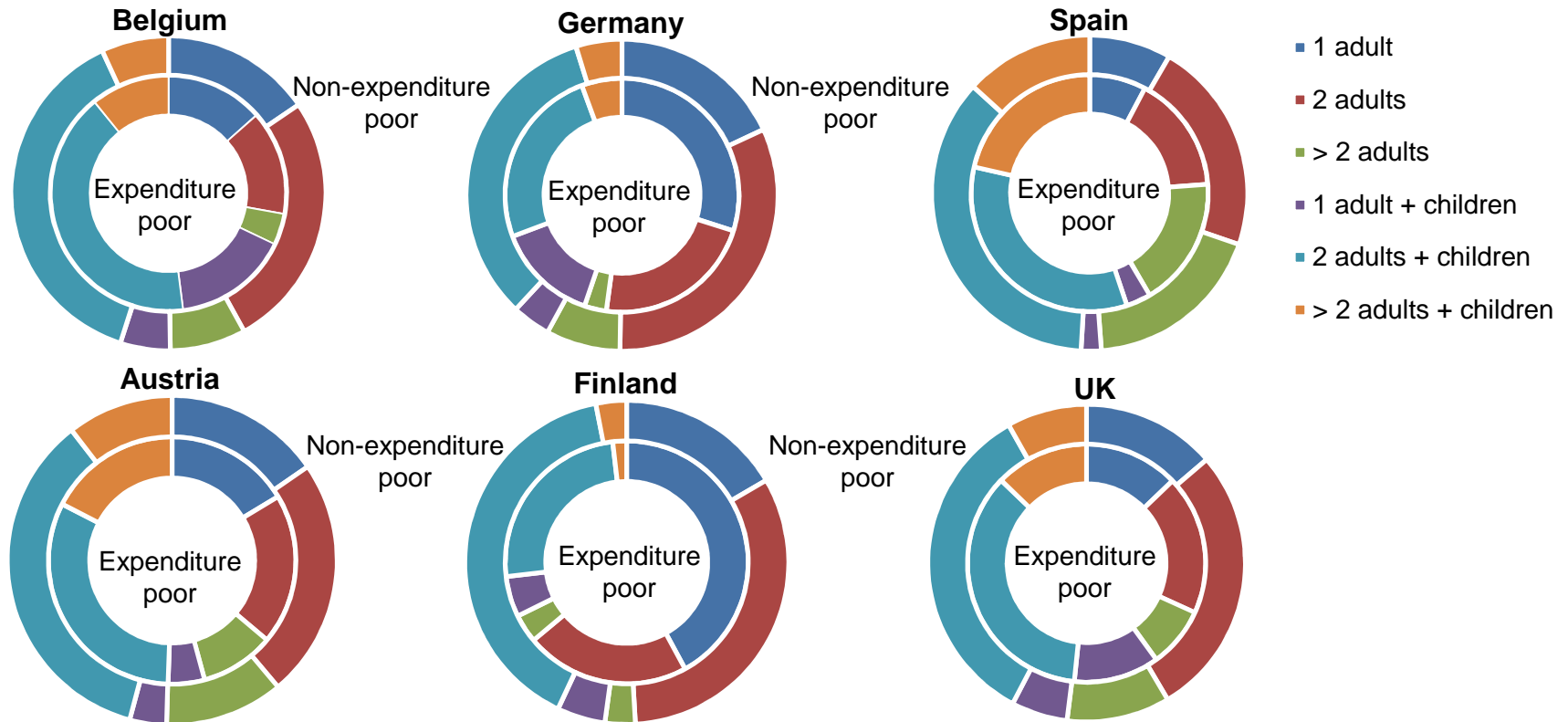
- Defined as difficulty or great difficulty making ends meet (HS120)
- Again... generally stronger relationship with income poverty than expenditure, particularly Austria and Finland

Characteristics of expenditure poor – activity status of householder



- Higher proportion of unemployed in expenditure poverty – particularly Germany & Belgium
- In Finland, larger proportion of expenditure poor households headed by retired person

Characteristics of expenditure poor – household type



- In Finland, all adult households make up the largest proportion of expenditure poor – other countries, households with dependent children
- Across all countries, 2 adult households make up a lower proportion of expenditure poor households

Conclusions: statistical matching

Statistical matching of EU-SILC and HBS encouraging:

- Appears matching broadly effective across all 3 countries
- No clear 'winner', though mixed and hotdeck approaches appear marginally more effective overall
- Statistical matching could be improved if variables measuring comparable concepts were fully harmonised across ESS surveys
- Supports aim of EU-SILC legal basis TF in considering inclusion of 'hooks' to facilitate statistical matching with HBS and HFCS

Conclusions: poverty analysis

- Relationship between severe material deprivation and income poverty slightly stronger than with income poverty
 - But... Still clear evidence of relationship between expenditure & other living standards measures
 - Limited overlap highlights importance of each measure in identifying vulnerable groups
- Income poor but not expenditure or MD:
 - May be able to consumption smooth to maintain living standards due to (expected) temporary low income
- Expenditure poor but not income or MD:
 - Possible uncertainty over future income levels / lack of assets
 - “zero hours” contracts