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
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 maternal and expenditure.
  - Examined using multiple linear and logistic regression models.

**Final matching variables:**

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<th>BELGIUM</th>
<th>GERMANY</th>
<th>SPAIN</th>
<th>AUSTRIA</th>
<th>FINLAND</th>
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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
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