Institute of Sociology
Czech Academy of Sciences

Alternative Approaches to the Identification of the Subjectively Poor

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Mannheim (DE), 7-8 March 2019

The Concept of subjective poverty

- Poverty lines reflect individuals' inherent subjective perceptions of socially acceptable minimum living standard in a given society (Ravallion, 1992)

- Two main approaches:
  - Scale-based approach (e.g.: Overall, on a scale of 0 to 10, how satisfied are you with the financial situation of your household?)
  - Income-based questions (MIQ, IEQ)
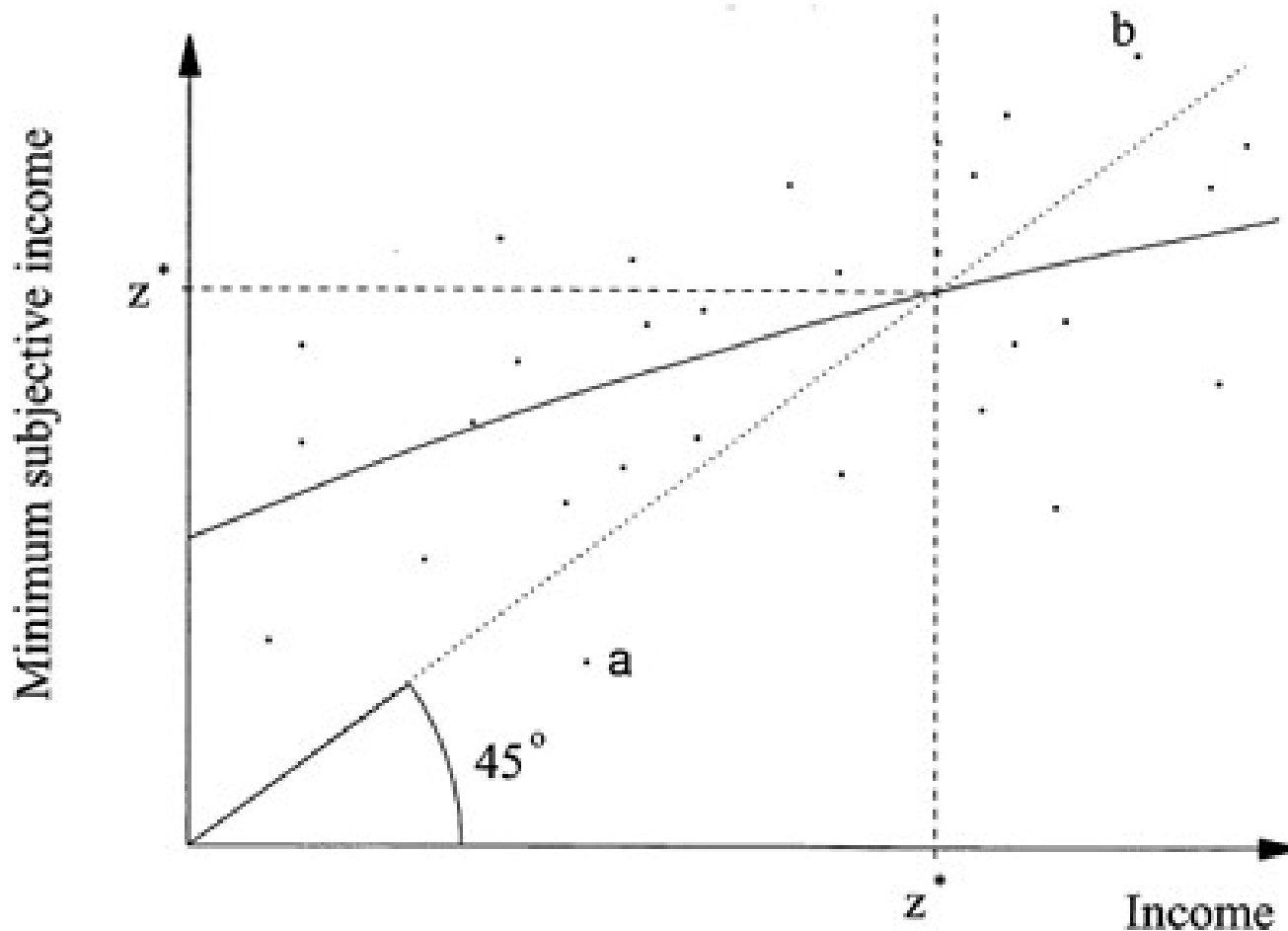
The Concept of subjective poverty

Minimum Income Question (MIQ)

- **EU-SILC:**

"In your opinion, what is the very lowest net monthly income that your household would have to have in order to make ends meet, that is to pay its usual necessary expenses? Please answer in relation to the present circumstances of your household, and what you consider to be usual necessary expenses (to make ends meet)."

The Concept of subjective poverty

Minimum Income Question (MIQ)

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Minimum Income Question (MIQ)

- Identification of subjectively poor: y < z*

  y = actual income

  z = subjective minimum income

  z* = subjective poverty line

The Concept of subjective poverty

Minimum Income Question (MIQ)

- Traditional approach – linear function:
  - Estimated function: $\hat{y}_M = \hat{\beta}_0 + \hat{\beta}_1 y_A$
  - Intersection: if minimum subjective income equals actual income: $\hat{y}_M = y_A$
  - **Identified as subjectively poor:**

    if actual income < subjective poverty line $z^* = \frac{\hat{\beta}_0}{1-\hat{\beta}_1}$, i.e.:

$$y_A < z^* \Rightarrow y_A < \hat{\beta}_0 + \hat{\beta}_1 y_A \Rightarrow y_A < \hat{y}_M$$

Our approach

- OLS regression – many advantages
- **But – is it the "best" estimation technique for this exercise?**
- To what extent is the estimated share of subjectively poor population sensitive to the estimation technique?
  - OLS
  - Quantile regression
  - Multivariate Adaptive Regression Splines (MARS)
  - Local Polynomial Regression Fitting (LOESS)
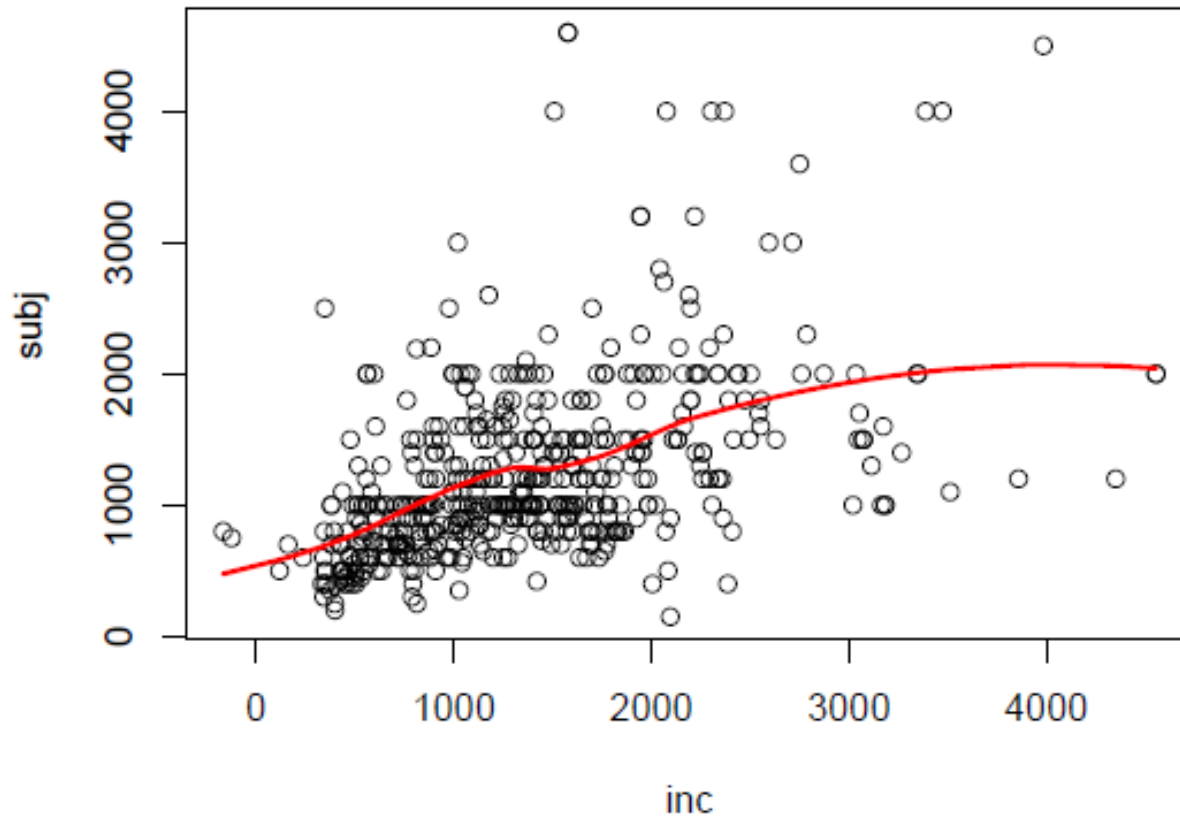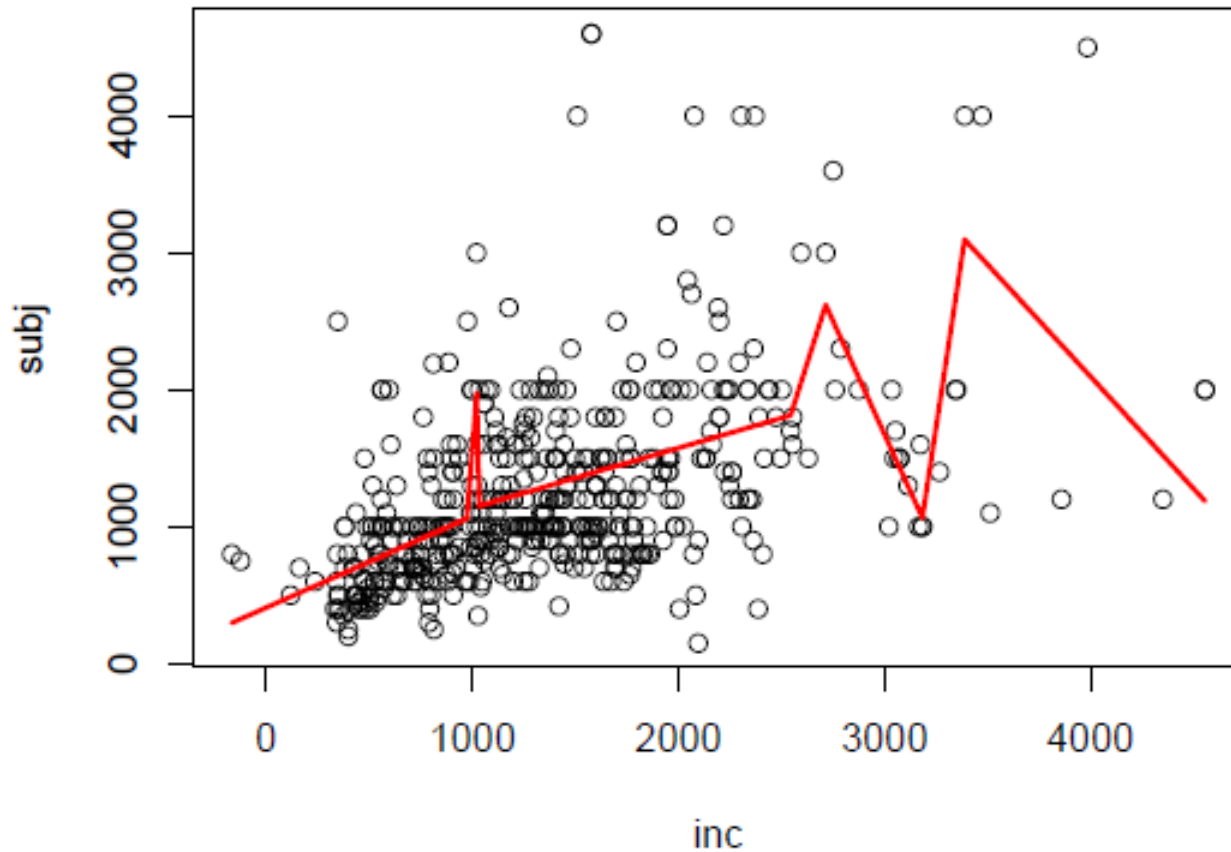 - Mixture regressions
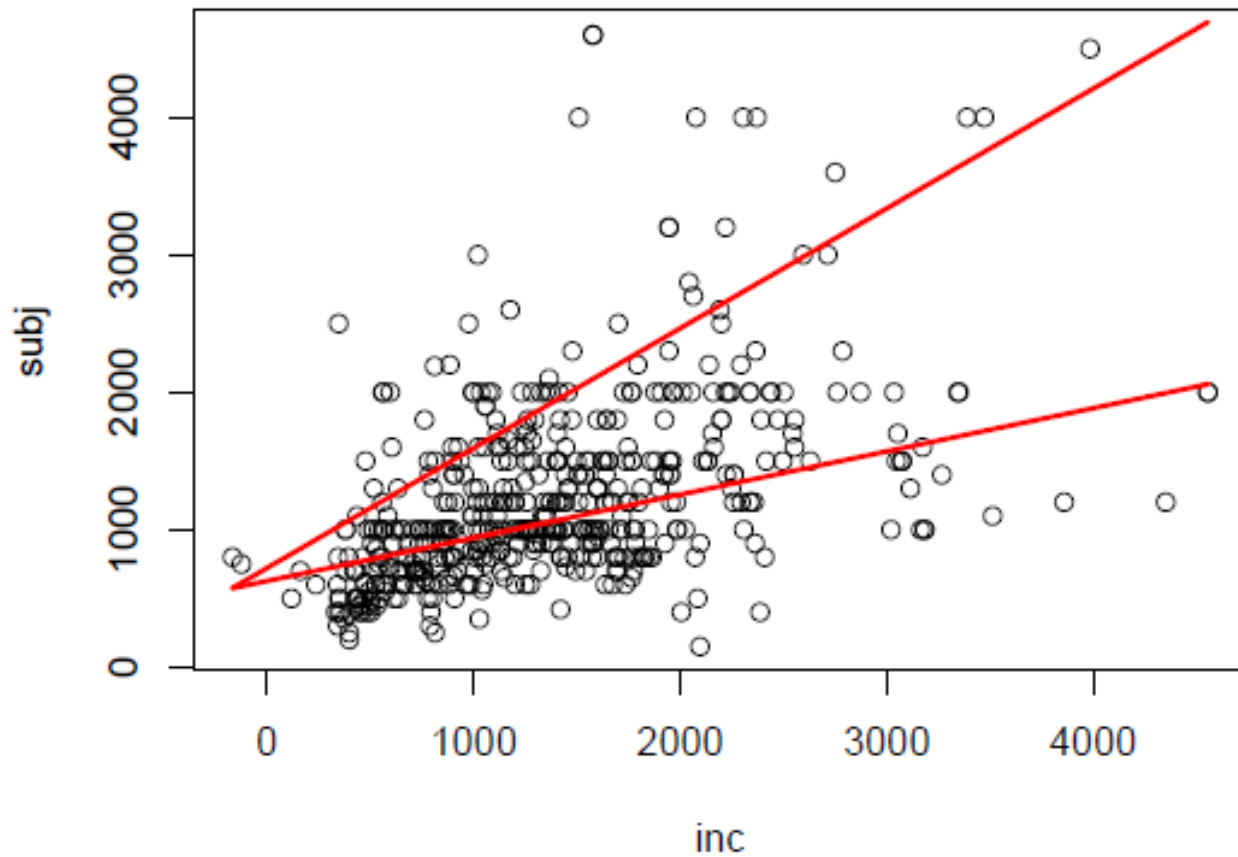
OLS
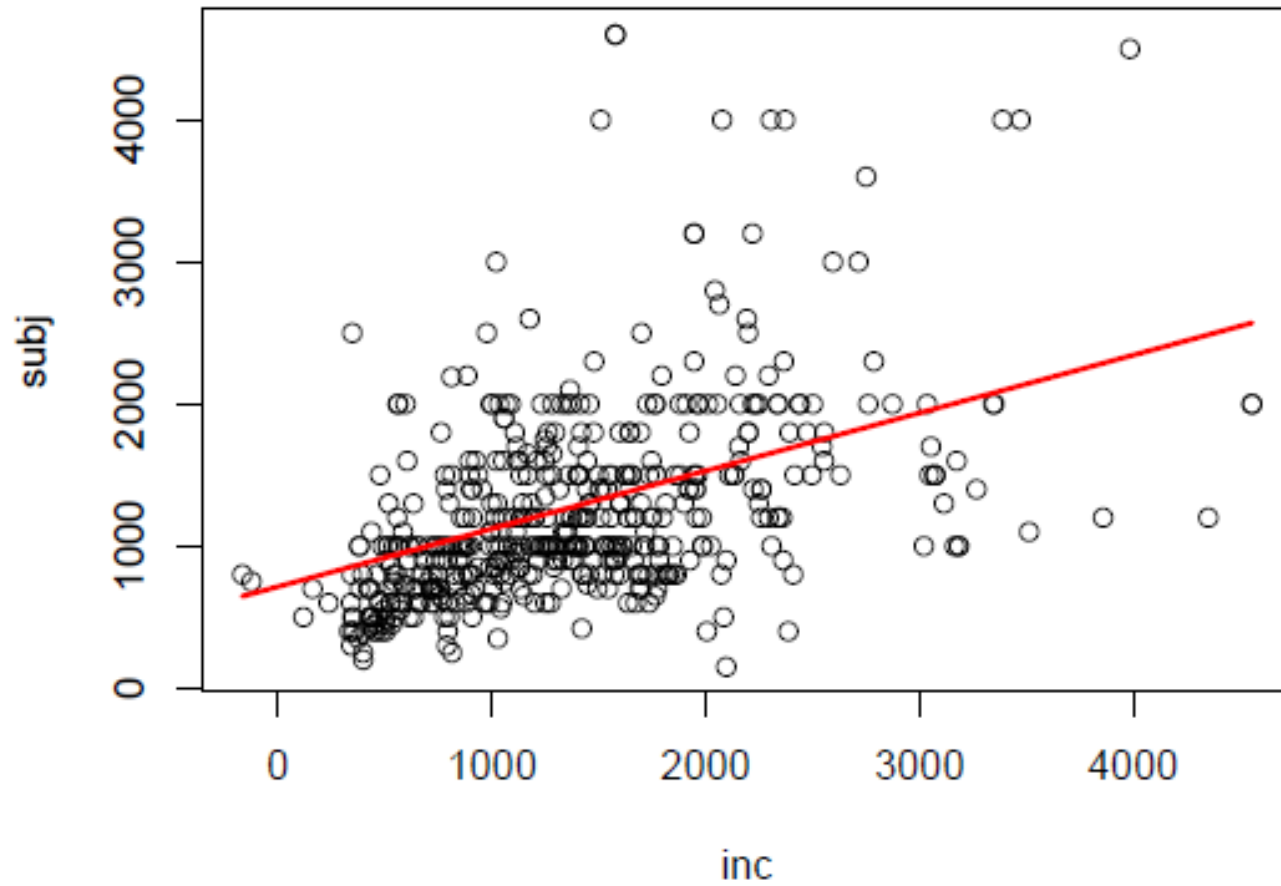
Quantile regression
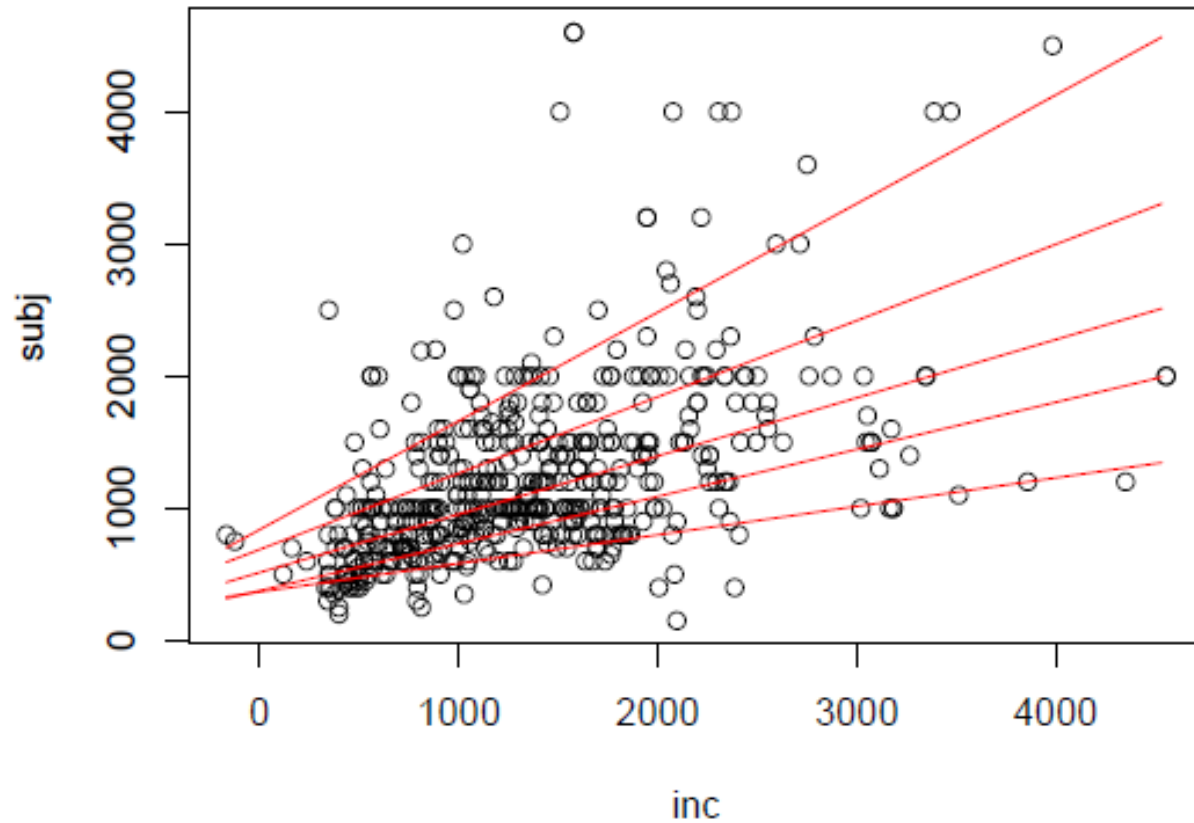
Local Polynomial Regression Fitting (LOESS)

Multivariate Adaptive Regression Splines (MARS)

Mixture regressions

Data & Methods

- EU-SILC 2017

- Household level

- Eq.: $\log y_M = \beta_0 + \beta_1 \log y_A + \beta_2 s_A + \beta_3 s_K + \varepsilon$, where:

  y_M is minimum required income
  y_A is actual income
 s_A is the number of adults in the household
  s_K is the number of children in the household

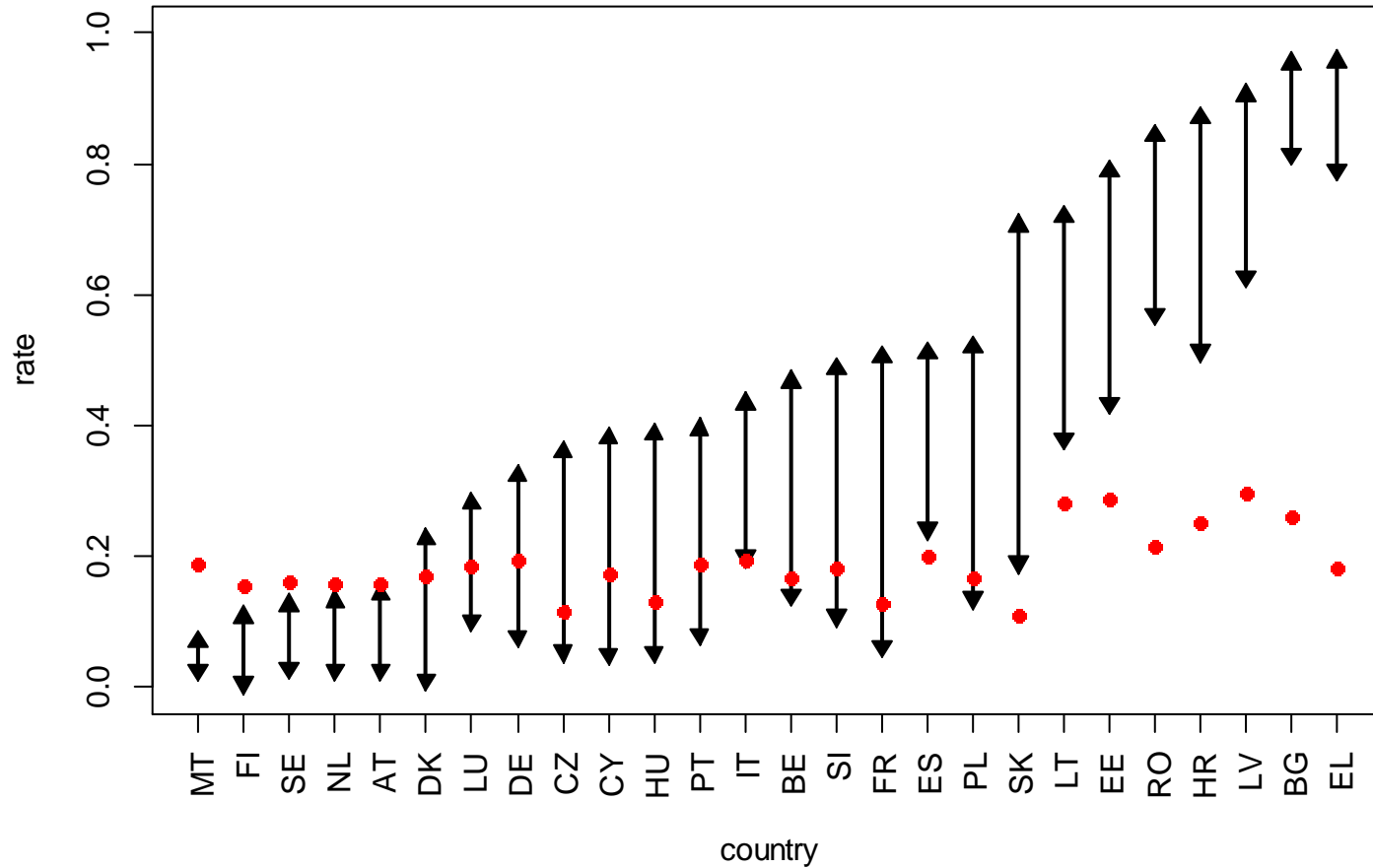# Preliminary results

We present:

1. Range of subjective poverty rates based on MIN/MAX from all five techniques.
2. "Interval estimate" of subjective poverty rate.
3. Overlap of subjective poverty rate with AROP.
4. Mutual overlap of all possible pairs of all techniques.
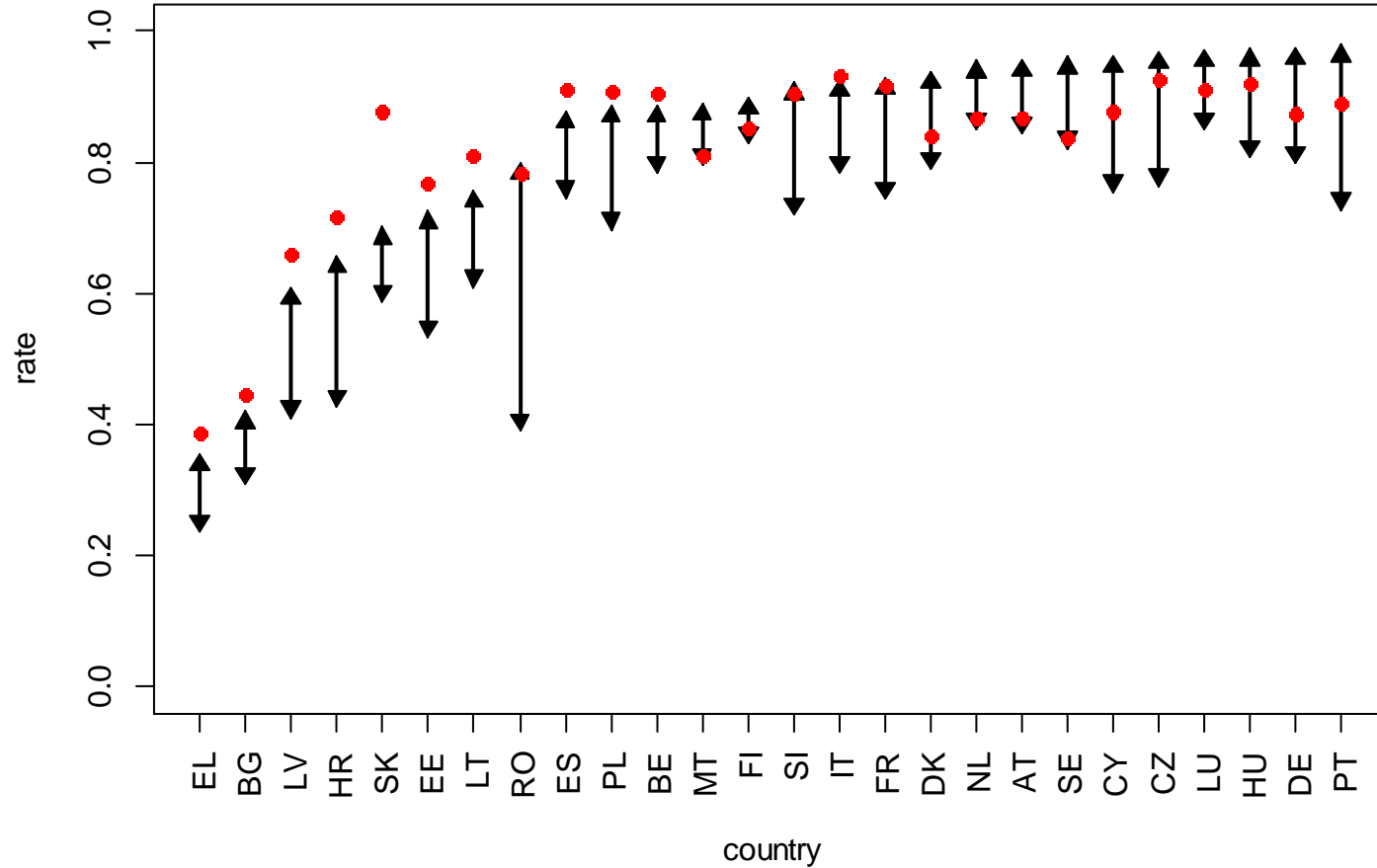
Range of subjective poverty rates (SPR)
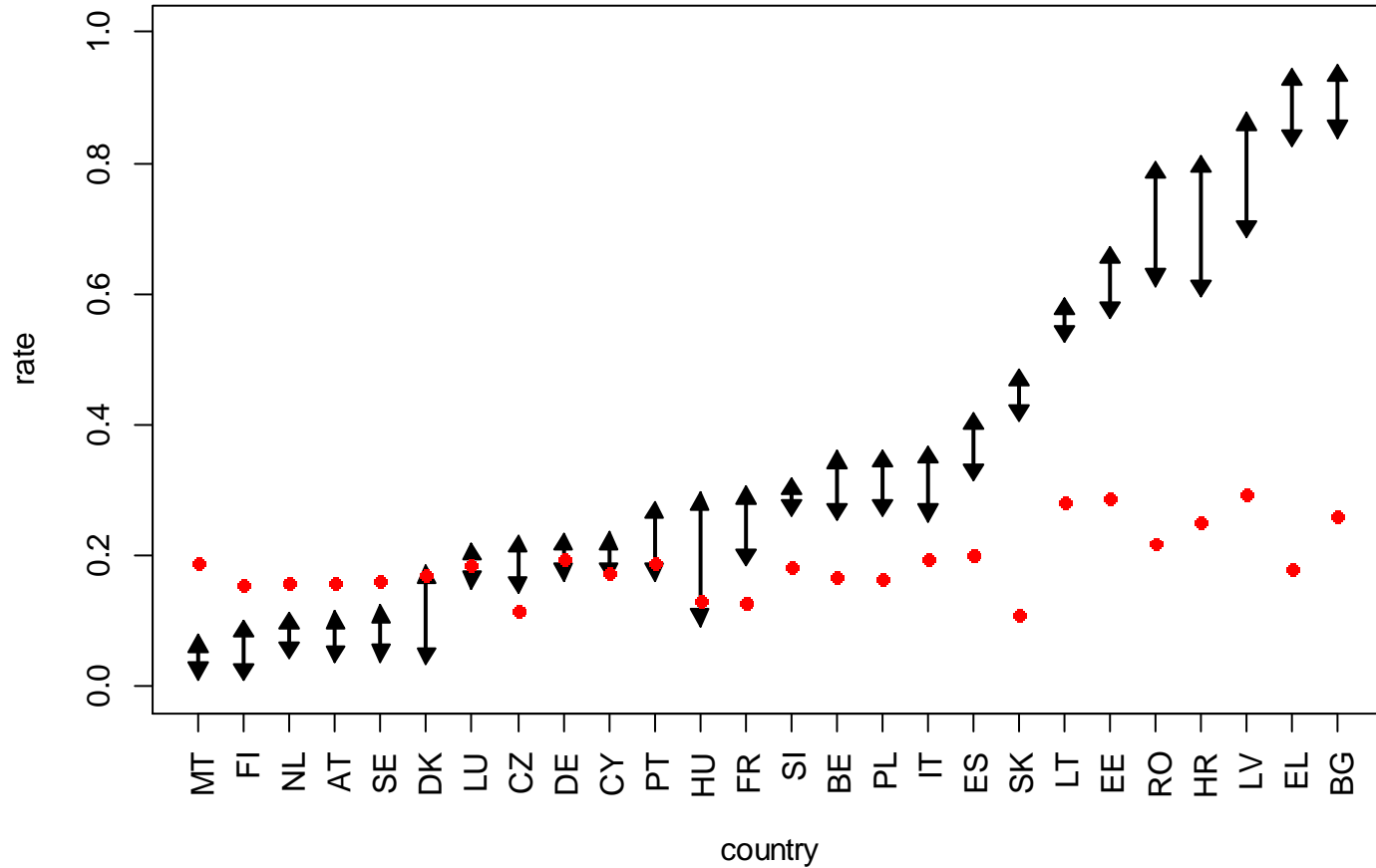
Note: Red dots represent AROP
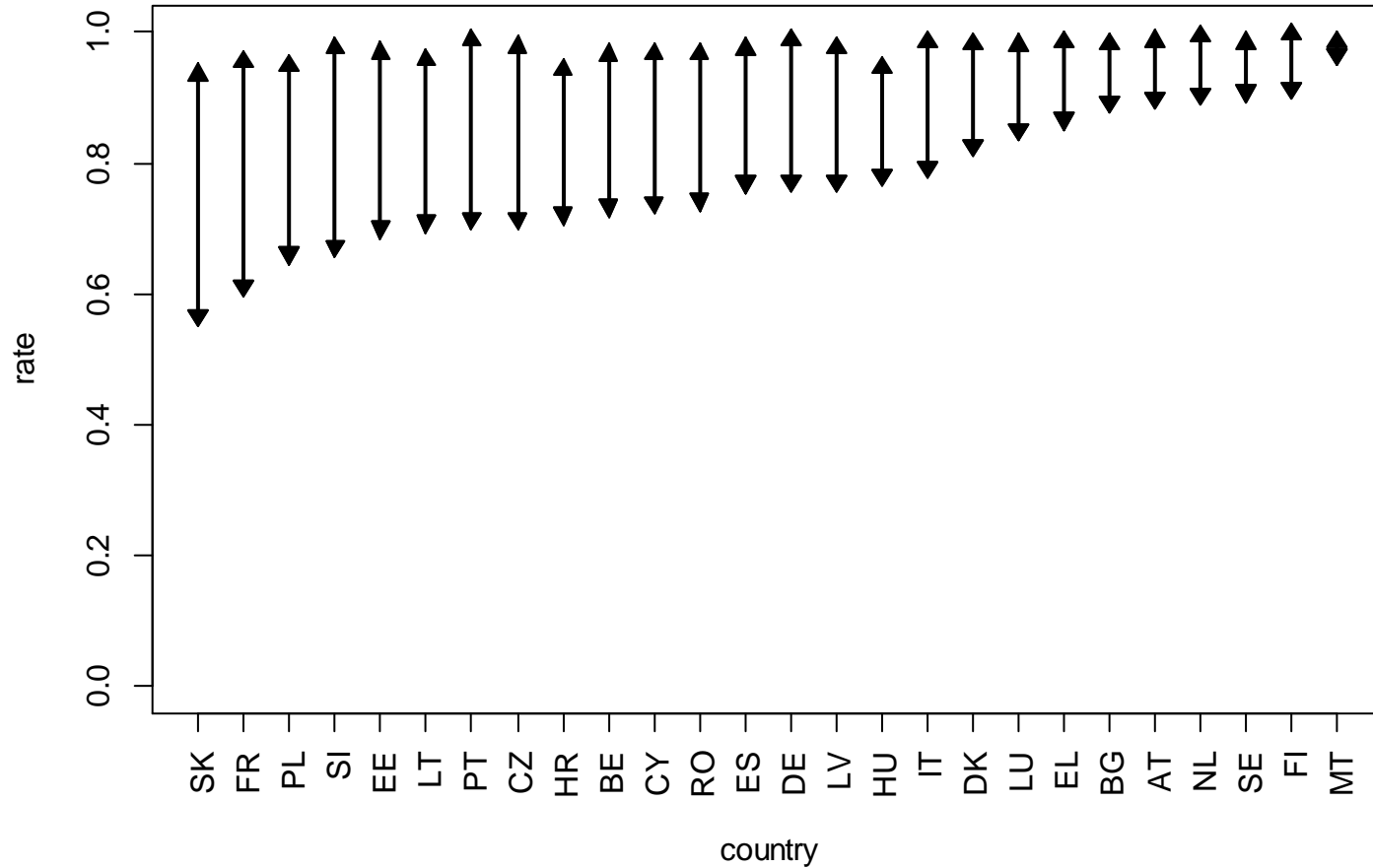
"Interval estimate" of SPR

Note: Red dots represent AROP

Overlap with AROP

Note: Red dots = proportion of households identified as poor by all five methods

Overlaps among all pairs of methods

Conclusions

- The differences across estimation techniques are relatively large (?)

- Next steps:
  - What causes the differences among the methods in some of the particular cases?
  - Add control variables.
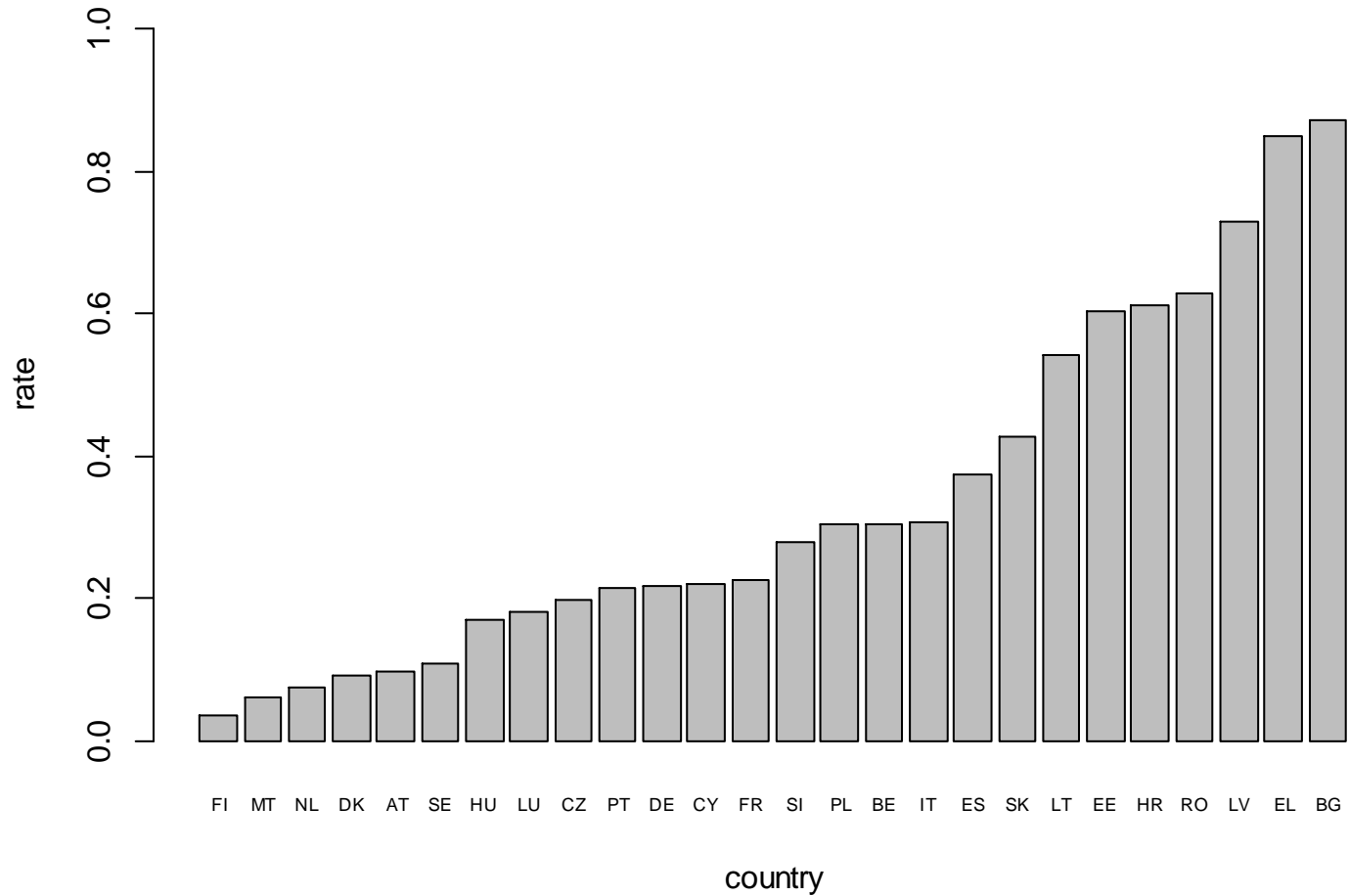 - How to select the "best" method for each country?

Thank you for attention
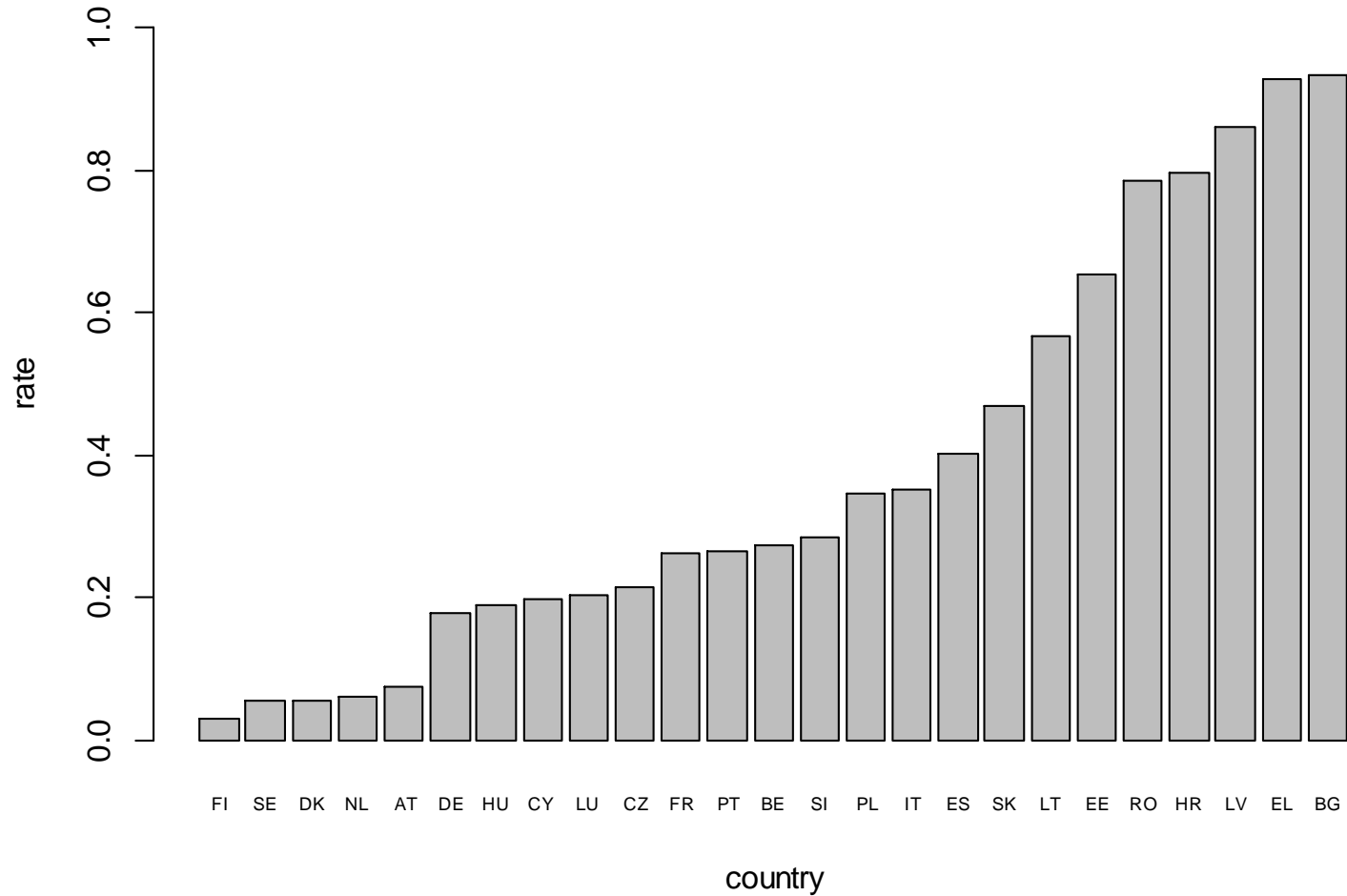
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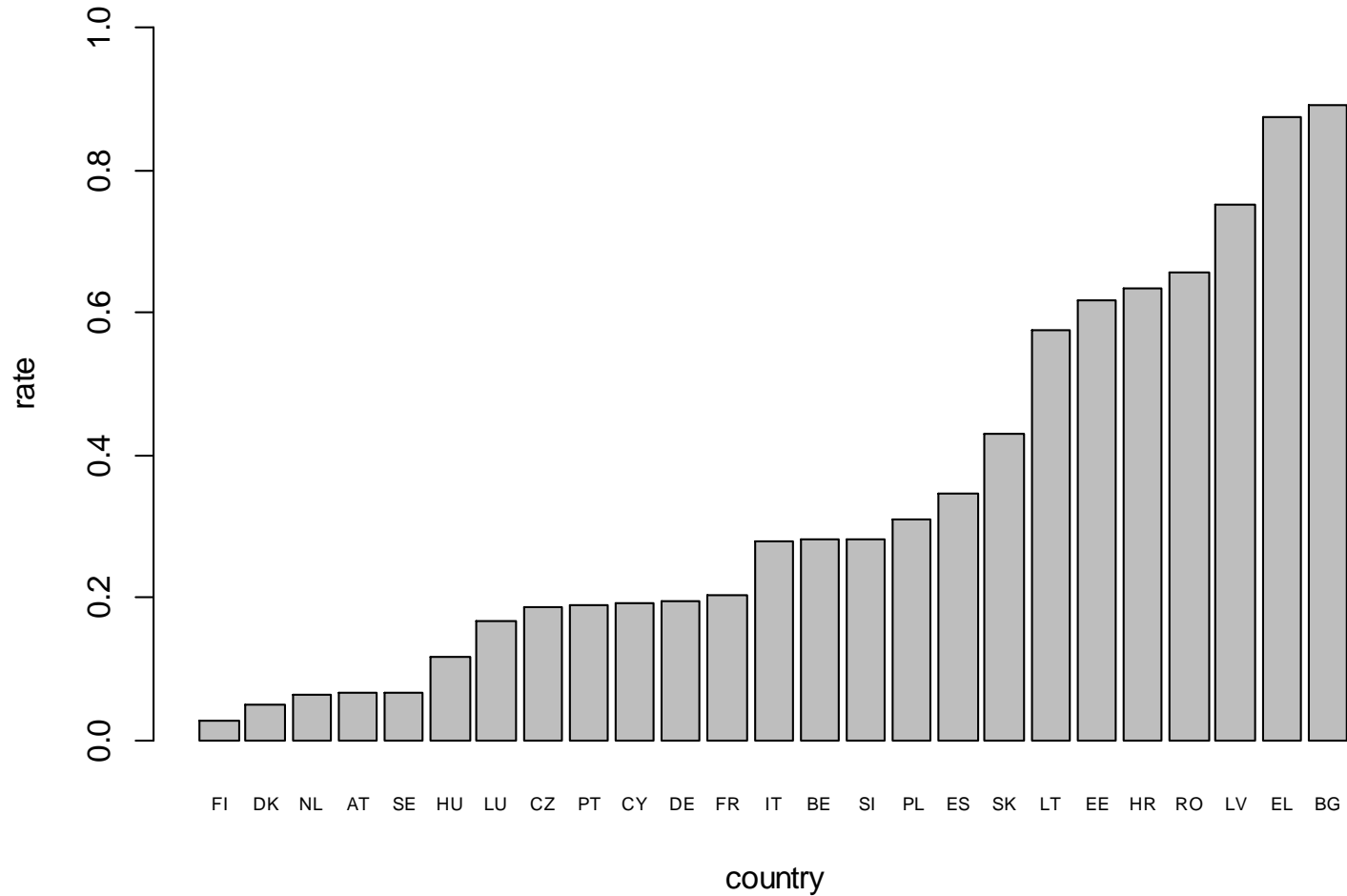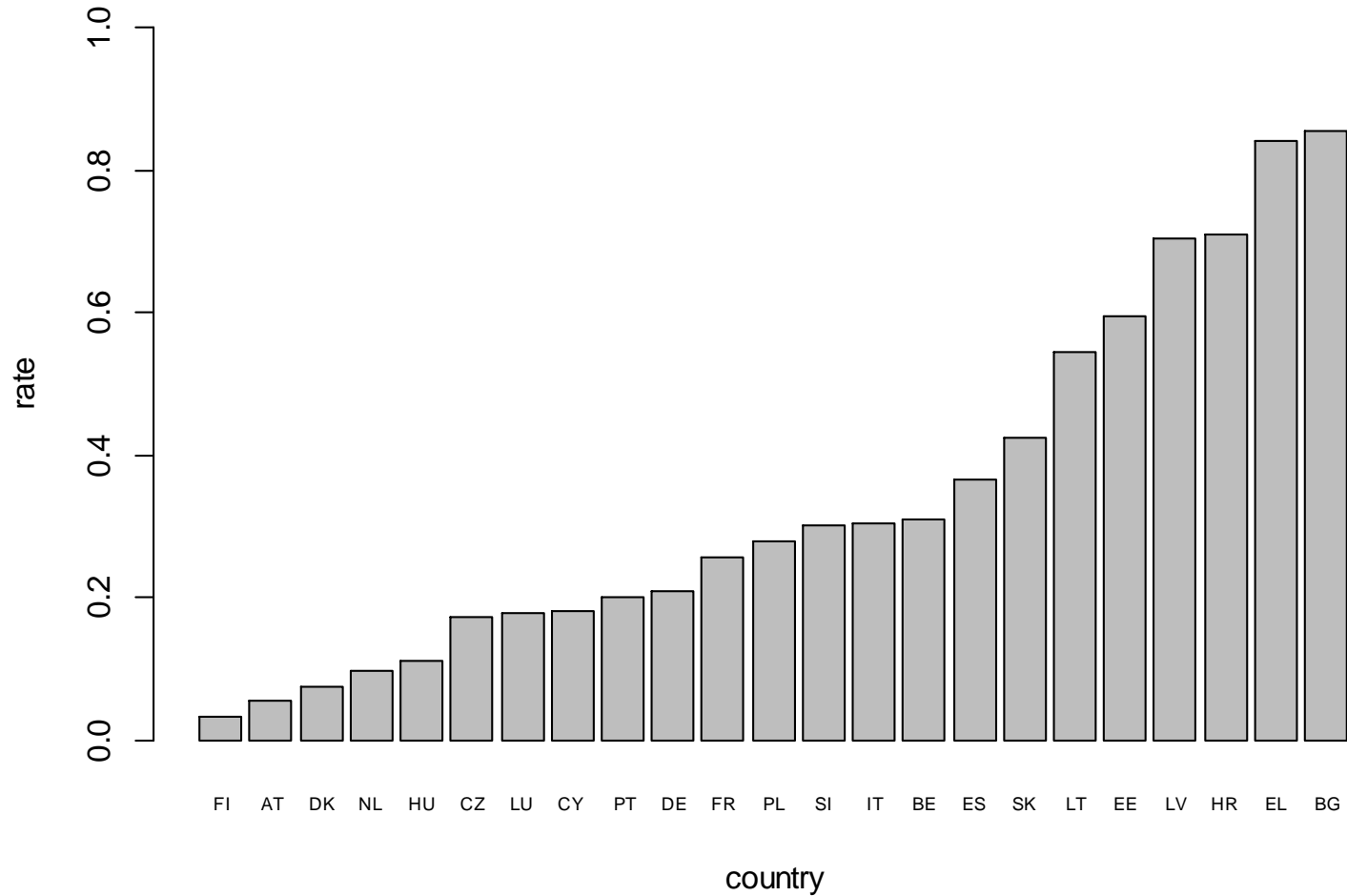**Institute of Sociology**
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SPR: OLS

SPR: QUANT

SPR: MARS

SPR: MIXT

SPR: LOES