Subjective poverty – thresholds and poverty rates in selected EU countries
Comparative analysis based on the EU-SILC data

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Purpose of the presentation

• a contribution to the discussion on the possibilities of much wider use of subjective approach to poverty measurement
• to present empirical results of the application of the so-called quasi Leyden Poverty Line (quasi LPL) for the comparative analysis of subjective poverty in selected countries of the European Union

A detailed description of the new method of constructing subjective poverty lines (quasi LPL) was presented by authors during the UNECE Expert meeting on measuring poverty and inequality held in Vienna in November 2018 (“Subjective poverty lines based on the EU-SILC”).
Subjective poverty assessment – methods and approaches (selected)

- Poverty defined in a fully subjective way (self-assessment)
- Subjective poverty thresholds/lines (examples of measures)
  - actual income < declared minimal income
  - „making ends meet” with difficulty or great difficulty
- So-called subjective poverty lines („objectivized” approach, poverty lines assessed with the use of statistical methods)
  - LPL – Leyden Poverty Line (Goedhart et al., 1977, Flik and Van Praag, 1991)
  - SPL – Subjective Poverty Line (Goedhart et al., 1977, Kapteyn et al., 1985)
  - CSP – The Centre for Social Policy Poverty Line (Deleeck, 1977)
The idea of the „objectivized” subjective poverty lines

• Poverty thresholds
  • fixed for the whole population or some subpopulations defined by objective criteria (household/family size or composition, main income source, place of living, etc.) – it makes the thresholds „objective”
  • calculated on the basis of households' subjective assessments of their actual or theoretical („imagined”) financial situation, respectively aggregated for the population or subpopulations – taking into account the individual subjective assessments justifies the term „subjective”
  • the aggregation of assessments often requires the use of quite advanced statistical methods, including regression models

• Assessment of poverty at the individual (household) level:

  \[
  \text{actual household’s income} < \text{poverty threshold calculated for the subpopulation, to which the household belongs}
  \]
Subjective poverty assessment – the methods and approaches used in the empirical analysis

- Subjective poverty lines ("objectivized" approach)
  - Subjective Poverty Line (SPL)
  - *quasi LPL approach* –
    authors’ proposal (2018) based on the idea of Leyden Poverty Line (LPL)

- "Fully subjective" poverty measures (only subjective opinions, without calculating any objective poverty thresholds)
  - actual income < declared minimal income (MINQ question based) ["pure" MINQ]
  - "making ends meet" with difficulty or great difficulty (Deleeck question based) ["pure" Deleeck]
## Sources of assessment of the utility of income

<table>
<thead>
<tr>
<th>LPL</th>
<th>SPL</th>
<th>quasi LPL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IEQ question:</strong> Under my/our conditions I would call an household income of: about ........... very bad, about ........... bad, about ........... insufficient, about ........... sufficient, about ........... good, about ........... very good. Please enter an answer on each line.</td>
<td><strong>MINQ question:</strong> What do you consider as an absolute minimum income for a household such as yours to be able to „make ends meet”?</td>
<td><strong>Deleeck question:</strong> Can you make ends meet with the actual income of your household: ☐ with great difficulty, ☐ with difficulty, ☐ rather easily, ☐ easily, ☐ very easily?</td>
</tr>
</tbody>
</table>

**Not included in EU-SILC**
Calculation of poverty thresholds

**LPL** vs **quasi LPL**

**LPL**
- Questionnaire
  - IEQ
  - 6 pairs (income level, utility)
  - Available to estimate ($\mu, \sigma$)
  - Poverty thresholds on the population level
    - Estimated by regression from the individual $\mu$ - $s$

**quasi LPL**
- Deleeck quest. + actual income
  - 1 pair (income level, utility)
  - Not available
  - Estimated by regression from the individual pairs (income, utility)

**Individual level utility function (WFI)**
Subjective poverty lines – comparison of data needs

<table>
<thead>
<tr>
<th>Survey question</th>
<th>Utilization in the method</th>
<th>Refers to:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LPL</td>
<td>SPL</td>
</tr>
<tr>
<td>IEQ</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>MINQ</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Deleeck question</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Actual income</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

No need to assess the utility of imagined income levels

EU-SILC target variables:
- MINQ: HS130 – Lowest monthly income to make ends meet
- Deleeck question: HS120 – Ability to make ends meet
- Actual income: HY020 – Total disposable household income

Present in EU-SILC

Subjective poverty lines – comparison of data needs

EU-SILC target variables:
- MINQ: HS130 – Lowest monthly income to make ends meet
- Deleeck question: HS120 – Ability to make ends meet
- Actual income: HY020 – Total disposable household income
### LPL vs quasi LPL – main source of discrepancies

<table>
<thead>
<tr>
<th>IEQ</th>
<th>Deeleck question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income assessment:</td>
<td>„Making ends meet”:</td>
</tr>
<tr>
<td>• very bad</td>
<td>• with great difficulty</td>
</tr>
<tr>
<td>• bad</td>
<td>• with difficulty</td>
</tr>
<tr>
<td>• insufficient</td>
<td>• with some difficulty</td>
</tr>
<tr>
<td>• sufficient</td>
<td>• rather easily</td>
</tr>
<tr>
<td>• good</td>
<td>• easily</td>
</tr>
<tr>
<td>• very good</td>
<td>• very easily</td>
</tr>
</tbody>
</table>

- The assessments on this two scales seem incomparable
- Quasi LPL requires using lower utility levels defining poverty thresholds than original LPL (0.25-0.3 seem reasonable, when 0.4-0.5 commonly used in original LPL)
- Not assessing the utility of imagined income levels in quasi LPL may be another reason of discrepancies
Comparative analysis – countries

Selected EU countries included in the analysis:

• Selected „new member states” („new EU” countries):
  • Poland (PL)
  • Czech Republic (CZ)
  • Slovakia (SK)
  • Hungary (HU)

• Selected EU15 („old EU”) countries:
  • Austria (AT)
  • France (FR)
  • Spain (ES)

The analysis is based on the EU-SILC 2017 data
Comparative analysis – assumptions

- Specification of models for calculation the subjective poverty lines
  - Quasi LPL
    \[ \ln(y_i) = \gamma_0 + \gamma_1 \ln(hhsize_i) + \gamma_2 \Phi^{-1}(u_i) \]
  - SPL
    \[ \ln(ylow_i) = \delta_0 + \delta_1 \ln(y_i) + \delta_2 \ln(hhsize_i) \]

  \( y \) – actual income
  \( hhsize \) – household’s size (number of persons)
  \( u \) – utility of the actual household’s income (derived from Deleeck question)
  \( ylow \) – declared household’s minimal income (from MINQ)

- The basic utility threshold for quasi LPL analysis is 0.25
Comparison of poverty thresholds (EUR)

1-pers. household

monthly disposable income in EUR

0  500  1 000  1 500  2 000

PL  CZ  SK  HU  AT  FR  ES

4-pers. household

(2 adults + 2 children)

monthly disposable income in EUR

0  1 000  2 000  3 000  4 000

PL  CZ  SK  HU  AT  FR  ES

quasi LPL (0.25)  SPL  AROP (60% med)
Comparison of poverty thresholds (PPS)

1-pers. household

4-pers. household
(2 adults + 2 children)

monthly disposable income in PPS

0 500 1 000 1 500

PL   CZ   SK   HU   AT   FR   ES

quasi LPL (0.25)  SPL  AROP (60% med)

monthly disposable income in PPS

0 1 000 2 000 3 000 4 000

PL   CZ   SK   HU   AT   FR   ES

quasi LPL (0.25)  SPL  AROP (60% med)
Quasi LPL empirical equivalence scales

(for OECD equiv. scales 2 adults assumed in more than 1-pers. households)
SPL empirical equivalence scales

(for OECD equiv. scales 2 adults assumed in more than 1-pers. households)
## Comparison of poverty rates

<table>
<thead>
<tr>
<th>Country</th>
<th>Relative AROP</th>
<th>Subjective („objectivised”) quasi LPL (0.25)</th>
<th>Subjective („objectivised”) quasi LPL (0.084)</th>
<th>„Fully” subjective „pure” Deleeck</th>
<th>„Fully” subjective „pure” MINQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL</td>
<td>15,0%</td>
<td>30,0%</td>
<td>15,0%</td>
<td>23,5%</td>
<td>22,3%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>27,0%</td>
</tr>
<tr>
<td>CZ</td>
<td>9,2%</td>
<td>32,6%</td>
<td>14,2%</td>
<td>12,7%</td>
<td>22,0%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>19,3%</td>
</tr>
<tr>
<td>SK</td>
<td>12,4%</td>
<td>29,8%</td>
<td>13,6%</td>
<td>38,0%</td>
<td>26,2%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>42,3%</td>
</tr>
<tr>
<td>HU</td>
<td>13,4%</td>
<td>40,1%</td>
<td>22,3%</td>
<td>14,3%</td>
<td>41,1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17,6%</td>
</tr>
<tr>
<td>AT</td>
<td>14,5%</td>
<td>21,5%</td>
<td>10,5%</td>
<td>8,0%</td>
<td>11,6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>8,4%</td>
</tr>
<tr>
<td>FR</td>
<td>13,7%</td>
<td>26,8%</td>
<td>9,7%</td>
<td>19,2%</td>
<td>18,1%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>28,3%</td>
</tr>
<tr>
<td>ES</td>
<td>21,6%</td>
<td>28,5%</td>
<td>14,2%</td>
<td>33,6%</td>
<td>25,2%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>36,3%</td>
</tr>
</tbody>
</table>
Comparison of poverty rates
AROP vs quasi LPL (ordered by AROP)
Comparison of poverty rates
Subjective poverty measures (ordered by quasi LPL)
Subjective poverty (quasi LPL) by the definition of poverty threshold (minimum utility level)
Relative poverty (equivalised income median based) by the definition of poverty threshold (as a particular part of the median)
Utility threshold (according to quasi LPL) corresponding with the values of another poverty rates

<table>
<thead>
<tr>
<th>Country</th>
<th>The utility threshold (alpha) level which gives the same value of quasi LPL subjective poverty rate like:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AROP (60% med)</td>
</tr>
<tr>
<td>PL</td>
<td>0.084</td>
</tr>
<tr>
<td>CZ</td>
<td>0.042</td>
</tr>
<tr>
<td>SK</td>
<td>0.067</td>
</tr>
<tr>
<td>HU</td>
<td>0.034</td>
</tr>
<tr>
<td>AT</td>
<td>0.145</td>
</tr>
<tr>
<td>FR</td>
<td>0.124</td>
</tr>
<tr>
<td>ES</td>
<td>0.178</td>
</tr>
</tbody>
</table>
Conclusions and remarks

• It can be concluded that in the analysed countries the level of subjective poverty thresholds estimated using the quasi-LPL method reflects the standard of living in these countries measured by income. In the „old EU” countries, these thresholds are generally higher than in the „new EU” countries.

• Quasi LPL subjective thresholds on the utility level 0.25 and corresponding poverty rates are higher than in case of relative poverty (measured by AROP with the threshold 60% of median equivalised income). If we consider much lower utility level 0.084 (giving the subjective poverty equal to the relative one in case of Poland) the subjective rates are higher than the relative ones in another analysed „new EU” countries and lower than the relative ones in „old EU” countries.

• Relative poverty (which in fact represent inequalities) is usually lower in the „new EU” countries (with exception of Poland) than in the „old EU” countries. Analysing the poverty by quasi LPL completely changes the picture – in all analysed „new EU” countries the poverty is higher than in „old EU” countries.

• In the „old EU” countries the thresholds of relative poverty corresponds with much higher utility level than in the „new EU” countries.
Conclusions and remarks

• According to quasi LPL the best situation we have in Austria, the worst in Hungary (however very deep poverty in France is even lower than in Austria)

• The comparison of poverty at different utility levels shows the advantage of quasi LPL (it refers also to the original LPL, which however is impossible to apply on EU-SILC) over SPL (which does not allow it). It shows that the result of comparison may differ for different utility levels (referring to deeper or rather moderate poverty)

• Quasi LPL gives the empirical equivalence scales which are quite close to OECD scales – the original and the modified OECD scales state the range for their variability. Empirical scales derived from SPL subjective poverty lines are less progressive than the original OECD scale (outside the range)
Thank you for your attention

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