Exploring differences in national and international poverty estimates: Is Uganda on track to halve poverty by 2015?

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UNDP Uganda

Ten years of 'war against poverty'
8-10 September 2010, University of Manchester
Figure 1: Trends and targets of poverty incidence in Uganda

Differences in poverty estimates

\[ \Delta P = P_A - P_B = P_A(\mu_A; z_A; L_A) - P_B(\mu_B; z_B; L_B) \]

\[ P = \text{Poverty estimate} \]
\[ \mu = \text{Mean welfare} \]
\[ L = \text{Lorenz curve} \]
\[ z = \text{Poverty line} \]
\[ A = \text{PovcalNet/World Bank} \]
\[ B = \text{MDGR/UBOS} \]
Figure 2: Comparison of normalised welfare measures

Sources: Author's calculations based on data from PovcalNet and UBOS.
Note: Welfare measures are normalised by the respective poverty lines.
**Figure 3: Differences in cumulative shares of welfare by ranked quin-quintile (PovcalNet-UBOS)**

Sources: Author’s calculations based on data from PovcalNet and UBOS.
Figure 4: Diagnostics of differences in poverty estimates

Notes: Proximate causes of divergent poverty estimates are numbered alphabetically and underlying causes are numbered numerically. An underlying cause that is likely to impact the comparison of estimates on poverty in Uganda is indicated with (+). Causes that may be important in other types of comparisons are indicated with (-).
Causes that can be eliminated

4. Indicator of welfare (consumption expenditure)
5. Unit of analysis (individual)
9. Missing values (not important)
13. Adjustment for household size (not done)
14. Adjustment using National Accounts (not done)
Causes where effect can be determined

1. Data organisation
2. Construction of the poverty line
3. Value of the poverty line
12. Adjustments for household composition
Table 3: Poverty and inequality measures from unit and grouped data

<table>
<thead>
<tr>
<th>Fractiles</th>
<th>Best fit Lorenz-curve</th>
<th>Mean (USH)</th>
<th>FGT poverty measures:</th>
<th>α=0</th>
<th>α =1</th>
<th>α=2</th>
<th>Watts</th>
<th>Gini</th>
<th>MLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1992/1993</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grouped data</td>
<td>5</td>
<td>Beta</td>
<td>23861.58</td>
<td>56.2</td>
<td>20.9</td>
<td>10.3</td>
<td>30.1</td>
<td>35.8</td>
<td>22.2</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Beta</td>
<td>23861.58</td>
<td>56.2</td>
<td>20.9</td>
<td>10.3</td>
<td>30.1</td>
<td>35.8</td>
<td>22.1</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>Beta</td>
<td>23861.58</td>
<td>56.1</td>
<td>20.9</td>
<td>10.3</td>
<td>30.0</td>
<td>35.7</td>
<td>22.0</td>
</tr>
<tr>
<td>Unit data</td>
<td>N=9923</td>
<td></td>
<td>23862.48</td>
<td>56.4</td>
<td>20.9</td>
<td>10.3</td>
<td>30.0</td>
<td>35.7</td>
<td>21.6</td>
</tr>
<tr>
<td></td>
<td>(22932.71-24792.25)</td>
<td>(54.2-58.6)</td>
<td>(19.7-22.1)</td>
<td>(9.6-11.1)</td>
<td>(28.4-32.6)</td>
<td>(34.2-37.3)</td>
<td>(19.7-23.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005/2006</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grouped data</td>
<td>5</td>
<td>Beta</td>
<td>39472.85</td>
<td>31.1</td>
<td>8.8</td>
<td>3.5</td>
<td>11.3</td>
<td>40.2</td>
<td>27.5</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Beta</td>
<td>39472.85</td>
<td>31.2</td>
<td>8.9</td>
<td>3.6</td>
<td>11.4</td>
<td>40.1</td>
<td>27.3</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>GQ</td>
<td>39472.85</td>
<td>31.4</td>
<td>8.9</td>
<td>3.3</td>
<td>11.7</td>
<td>39.9</td>
<td>26.6</td>
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<tr>
<td>Unit data</td>
<td>N=7421</td>
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<td>39469.73</td>
<td>31.1</td>
<td>8.8</td>
<td>3.5</td>
<td>11.5</td>
<td>39.9</td>
<td>26.4</td>
</tr>
<tr>
<td></td>
<td>(37743.8-41195.65)</td>
<td>(29.2-33.0)</td>
<td>(8.1-9.4)</td>
<td>(3.2-3.9)</td>
<td>(10.7-12.3)</td>
<td>(38.4-41.4)</td>
<td>(24.4-28.4)</td>
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<td></td>
</tr>
</tbody>
</table>

Notes: GQ = General Quadratic Lorenz-curve, Beta = Beta Lorenz-curve. MLD = Mean Log Deviation. Poverty line = USh 21135.17. Means are in 1997 prices. Figures in brackets represent 95% confidence intervals estimated on the unit data using Stata’s svy command and the survey sampling structure. Source: Author’s computations based on UBOS data for the full sample surveyed.
Table 7: Regional and national poverty lines

<table>
<thead>
<tr>
<th></th>
<th>1992/93</th>
<th>1999/00</th>
<th>2002/03</th>
<th>2005/06</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regional poverty</td>
<td>56.4%</td>
<td>33.8%</td>
<td>38.8%</td>
<td>31.1%</td>
</tr>
<tr>
<td>lines</td>
<td>(54.2%-58.6%)</td>
<td>(31.6%-36.0%)</td>
<td>(36.8%-40.8%)</td>
<td>(29.2%-33.0%)</td>
</tr>
<tr>
<td>National poverty</td>
<td>57.4%</td>
<td>34.8%</td>
<td>39.6%</td>
<td>31.5%</td>
</tr>
<tr>
<td>Line</td>
<td>(55.2%-59.6%)</td>
<td>(32.6%-37.0%)</td>
<td>(37.5%-41.6%)</td>
<td>(29.5%-33.5%)</td>
</tr>
</tbody>
</table>
Table 5: Comparing the real values of the poverty lines

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th></th>
<th>1.000</th>
<th>931</th>
<th>28,310</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conversion from</td>
<td></td>
<td></td>
<td>Day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>US$ PPP to local</td>
<td>1.25</td>
<td>745</td>
<td>1.25</td>
<td>745</td>
<td></td>
</tr>
<tr>
<td>currency</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>1.25</td>
<td>745</td>
<td>1.000</td>
<td>931</td>
<td>28,310</td>
</tr>
<tr>
<td>1997</td>
<td>1.25</td>
<td>745</td>
<td>0.745</td>
<td>694</td>
<td></td>
</tr>
<tr>
<td>1993</td>
<td>1.25</td>
<td>745</td>
<td>0.545</td>
<td>508</td>
<td></td>
</tr>
</tbody>
</table>

| Conversion from     | 1.25  | 745  | 21,091| 21,135| 16,443 |
| local currency to    |       |      | Month |       |        |
| US$ PPP              |       |      |       |       |        |
| 1997                | 1.25  | 745  | 695   | 21,135| 16,443 |
| 1993                | 1.33  | 745  | 541   |       |        |

Sources: Authors calculations based on data from PovcalNet, Appleton (1999) and EPRC.
Figure 5: FGT curves for 2005/2006

Source: Author’s computations based on UBOS data.
Causes where effect cannot be determined (but guesstimates are ok!)

6. Survey structure
7. Sampling errors
8. Non-sampling errors
9. Data sources
11. Price adjustments
Examples of limited/diverging information in PovcalNet

• Large variation in reported values of $\mu$ and PPP values (and no references or computations)
• No information on CPI values
• Inconsistent reference to survey sample sizes
• Includes 1989 survey (= “good quality”?) ; refers to National Integrated Household Survey of 1996
• Certain sections in meta data missing (“Documentation”) or n/a (“Details of consumption and/ income aggregates”)
• Users not “authorised” to access metadata on individual surveys
Figure 6: Access to survey information in PovcalNet

Figure 7: Adjustments to “official figures“

Table 6: Difference in poverty estimates

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a. MDGR/UBOS estimates</td>
<td>0.557</td>
<td>0.338</td>
<td>0.388</td>
<td>0.311</td>
</tr>
<tr>
<td>b. Full sample</td>
<td>0.564</td>
<td>0.338</td>
<td>0.388</td>
<td>0.311</td>
</tr>
<tr>
<td>c. National poverty line</td>
<td>0.574</td>
<td>0.348</td>
<td>0.396</td>
<td>0.315</td>
</tr>
<tr>
<td>d. Lower value of poverty line</td>
<td>0.530</td>
<td>0.303</td>
<td>0.350</td>
<td>0.278</td>
</tr>
<tr>
<td>e. Per capita</td>
<td>0.739</td>
<td>0.547</td>
<td>0.589</td>
<td>0.499</td>
</tr>
<tr>
<td>f. Price adjustments</td>
<td>0.658</td>
<td>0.405</td>
<td>0.424</td>
<td>0.352</td>
</tr>
<tr>
<td>g. All changes (b-f)</td>
<td>0.781</td>
<td>0.575</td>
<td>0.589</td>
<td>0.508</td>
</tr>
<tr>
<td>h. All changes + unweighted</td>
<td>0.722</td>
<td>0.544</td>
<td>0.517</td>
<td>0.508</td>
</tr>
<tr>
<td></td>
<td>(0.711-0.732)</td>
<td>(0.533-0.555)</td>
<td>(0.505-0.528)</td>
<td>(0.495-0.521)</td>
</tr>
<tr>
<td>i. PovcalNet/World Bank</td>
<td>0.700</td>
<td>0.605</td>
<td>0.574</td>
<td>0.515</td>
</tr>
<tr>
<td>j. Difference with UBOS (i-a)</td>
<td>0.143</td>
<td>0.267</td>
<td>0.186</td>
<td>0.204</td>
</tr>
<tr>
<td>k. Difference explained (h-a) using closest in range for h</td>
<td>0.147</td>
<td>0.217</td>
<td>0.140</td>
<td>0.204</td>
</tr>
<tr>
<td>l. Difference explained as share of total difference (k/j)</td>
<td>103%</td>
<td>81%</td>
<td>75%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Author’s computations based on UBOS data.
Conclusion

• Yes, Uganda is on track!
• Comparing national and international estimates is not straightforward; but results should not “stand alone”.
• Several features play a role—but especially Per capita measure used in PovcalNet—in overestimating poverty levels.
• More and better meta-data for both national and international agencies; WB to provide full “authorisation” to users, UBOS to capture (and simplify) adjustments.
• Closer and coordinated collaboration between statistical agencies; harmonisation of methods and survey cycles.