Utility-Consistent Poverty in Madagascar, 2001-2010: Snapshots in the Presence of Multiple Economy-wide Shocks

David Stifel – Lafayette College, USA
Tiaray Razafimanantena – CREAM, Madagascar
Faly Rakotomanana – INSTAT, Madagascar

UNU-WIDER Growth and Poverty Project (GAPP)
Conference on Inclusive Growth in Africa: Measurement, Causes, and Consequences
Helsinki, September 20-22, 2013
Questions

1. What are the levels of poverty in Madagascar, and how have they changed?

2. Do the snapshots of poverty from household surveys (2001, 2005 & 2010) represent...
   - long term trends?
   - short-term shocks?
   - both?
How has monetary poverty changed?
Measurement depends on consistency of...

a. Surveys over time

b. Construction of consumption aggregate

c. Poverty lines
   • Specificity & Consistency
   • Original poverty lines
     • Calculated in 2001 (CBN)
     • Updated for inflation & regional price variation
   • Note: Poverty lines – cost of living indexes that allow interpersonal welfare comparisons
Utility-Consistent Poverty Lines

Based on Arndt & Simler (2010)

• Calculate food poverty lines for spatial domains
  • anchored to domain-specific calorie requirements
  • least-cost bundle reflecting domain cons. patterns
  • Specificity
• Revealed preference tests – utility consistency
  • Do the consumption patterns in other spatial domains cost no less than the own-domain consumption patterns when both are evaluated at own-domain prices?
• Food poverty lines scaled up – region-specific poverty lines
Data

- Nationally representative multipurpose surveys
- Sample sizes
  - 2001: 5,080
  - 2005: 11,781
  - 2011: 12,460
- Similar questionnaires
## Poverty Estimates

<table>
<thead>
<tr>
<th></th>
<th>Levels</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2001</td>
<td>2005</td>
</tr>
<tr>
<td><strong>National</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P0</td>
<td>56.3</td>
<td>59.6</td>
</tr>
<tr>
<td>P1</td>
<td>23.6</td>
<td>23.6</td>
</tr>
<tr>
<td>P2</td>
<td>12.6</td>
<td>12.2</td>
</tr>
<tr>
<td><strong>Urban</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P0</td>
<td>33.1</td>
<td>42.5</td>
</tr>
<tr>
<td>P1</td>
<td>12.7</td>
<td>15.3</td>
</tr>
<tr>
<td>P2</td>
<td>6.5</td>
<td>7.6</td>
</tr>
<tr>
<td><strong>Rural</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P0</td>
<td>63.0</td>
<td>64.4</td>
</tr>
<tr>
<td>P1</td>
<td>26.9</td>
<td>25.9</td>
</tr>
<tr>
<td>P2</td>
<td>14.5</td>
<td>13.5</td>
</tr>
</tbody>
</table>
Poverty Incidence Curves - Urban

Share of the Population

Thousands of 2010 Urban Antananarivo Ariary Per Person Per Year

2001 2005 2010

Poverty Line
## Inequality

<table>
<thead>
<tr>
<th></th>
<th>2001</th>
<th>2005</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gini Coefficient</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National</td>
<td>0.454</td>
<td>0.410</td>
<td>0.393</td>
</tr>
<tr>
<td>Urban</td>
<td>0.427</td>
<td>0.431</td>
<td>0.426</td>
</tr>
<tr>
<td>Rural</td>
<td>0.438</td>
<td>0.383</td>
<td>0.365</td>
</tr>
<tr>
<td><strong>Theil</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>National</td>
<td>0.370</td>
<td>0.341</td>
<td>0.330</td>
</tr>
<tr>
<td>Urban</td>
<td>0.319</td>
<td>0.354</td>
<td>0.356</td>
</tr>
<tr>
<td>Rural</td>
<td>0.352</td>
<td>0.306</td>
<td>0.295</td>
</tr>
<tr>
<td><strong>Percent due to</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within Group Inequality</td>
<td>92.1</td>
<td>93.9</td>
<td>94.7</td>
</tr>
<tr>
<td>Between Group Inequality</td>
<td>7.9</td>
<td>6.1</td>
<td>5.3</td>
</tr>
</tbody>
</table>
Some Context

• Surveys conducted in 2001, 2005 and 2010
• Political crisis in 2002 just after 2001 survey completed
  – Support of international community following crisis
• 2004-5 – Rice price crisis & general inflation
• 2009 – beginning of most recent political crisis
  – Condemnation of international community
Complementary Data

Time periods between shocks
1. National accounts
2. Non-nationally representative surveys
3. Non-monetary measures (DHS)
Poverty & Real GDP Per Capita

2002: Post-election political crisis.

2009: Beginning of current political crisis

Poverty - Headcount Ratio

Poverty - Depth

Poverty - Severity

Per Capita GDP

Thousands of 2011 Ariary

Non-Monetary Measures

1. Under-five stunting
   – *moderate improvements*

2. Infant mortality rates
   – *Sharp rise in 2002*
   – *Otherwise moderate improvements*

3. Rising net schooling enrolment rates
Long-term trends or Short-term shocks?

- Snapshots of poverty miss the underlying long-term trends
- Growth and improved well-being interrupted by political shocks
- Latest political crisis is in it’s 4th year...
# Utility-Consistent vs. Original Poverty Estimates

<table>
<thead>
<tr>
<th></th>
<th>National</th>
<th></th>
<th>Urban</th>
<th></th>
<th>Rural</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>INSTAT Estimates</td>
<td>Difference with Utility-Consistent Estimates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Headcount Ratio (P₀)</strong></td>
<td>69.7 68.8 76.5</td>
<td>13.4 9.1 15.1</td>
<td>43.9 52.0 54.2</td>
<td>10.8 9.5 9.7</td>
<td>77.2 73.5 82.2</td>
<td>14.2 9.0 16.5</td>
</tr>
<tr>
<td><strong>Depth of Poverty (P₁)</strong></td>
<td>34.9 26.8 34.9</td>
<td>11.3 3.2 11.7</td>
<td>18.1 19.3 21.3</td>
<td>5.4 4.0 5.2</td>
<td>39.8 28.9 38.3</td>
<td>12.9 3.0 13.4</td>
</tr>
<tr>
<td><strong>Severity of Poverty (P₂)</strong></td>
<td>20.9 13.4 19.6</td>
<td>-7.5 6.2 -1.4</td>
<td>9.7 9.4 11.0</td>
<td>-0.3 1.6 1.3</td>
<td>24.2 14.5 21.7</td>
<td>-9.7 7.2 -2.5</td>
</tr>
</tbody>
</table>
Why the difference?

1. Consumption aggregates are same
2. UC poverty lines 13-46% lower
   a. Differing calorie requirements
   b. Differing baskets used for costing calories
   c. Regional 2001 poverty lines in original estimates are updated with inflation rates calculated from major cities (subset of urban)
      • Issue for rural areas
      • CPI places greater weight on non-foods than does UC basket
Concluding Remarks

1. Utility-consistent poverty estimates
   a. Urban areas worse off
   b. Rural poor are less poor

2. Snapshots during a tumultuous decade

3. Underlying trend of growth and welfare improvement interrupted by shocks