POVERTY LINES
Principles and Common Practices

Bosnia and Herzegovina Poverty Analysis Workshop
September 17-21, 2007

Giovanni Vecchi
Universita’ di Roma “Tor Vergata”
giovanni.vecchi@uniroma2.it
PLAN OF THE LECTURE

- Concepts and Principles
- Subjective vs. Objective Poverty Lines
- Relative vs. Absolute Poverty Lines
  - The Food Share Method
  - The Cost-of-Basic-Needs Method
- Conclusions
CONCEPTUAL FRAMEWORK

The measurement of poverty is a three-pronged process involving:

1) DEFINITION
Defining the term poverty, operationally.

2) IDENTIFICATION
Identifying the poor among the total population.
This involves the choice of a criterion of poverty, e.g. the choice of a poverty line...

3) AGGREGATION
Constructing an index of poverty using available data.
Once identified the welfare indicator, a poverty line must be set.

A (non-operational) definition (Ravallion, 1998: 3):

“I shall define a poverty line as the monetary cost to a given person, at a given place and time, of a reference level of welfare. People who do not attain that level of welfare are deemed poor, and those who do are not”.

Alternative methods of setting poverty lines:
1) subjective versus objective poverty lines
2) absolute versus relative poverty lines
Poverty lines are inherently subjective judgments people make about what constitutes a socially acceptable minimum standard of living in a particular society at a given time (Ravallion 1994: 42).

The subjective poverty approach is based on the self-assessed adequacy of a family’s food, housing, and clothing.

Surveys ask the Minimum Income Question (MIQ): “What income level do you personally consider to be absolutely minimal? That is to say that with less you could not make ends meet?”
MIQ, OPERATIONALLY...

SUBJECTIVE
MINIMUM INCOME

$z_i = \alpha + \beta y_i + \gamma' x + \varepsilon_i$

MINIMUM INCOME
greater than
ACTUAL INCOME

MINIMUM INCOME
less than
ACTUAL INCOME

$z^* = \frac{\alpha + \gamma' x}{1 - \beta}$

SUBJECTIVE POVERTY
LINE

45° LINE

i-th household

Giovanni Vecchi – 2007, Sep 17-21
SUBJECTIVE POVERTY LINES – ASSESSMENT

- **Problem # 1**
do households share the same concept of ‘income’? (very unlikely, and especially so in developing countries)

- **Problem # 2**
no guarantee of consistent inter-household welfare comparisons: people with the same level of income but with different answers can be classified differently.
ABSOLUTE VS. RELATIVE POVERTY

- An absolute poverty line is one which is fixed in terms of living standards (or welfare).
  - Example: cost of a bundle containing “basic commodities”, however defined.

- A relative poverty line is one which varies with the average standard of living.
  - Example: half the mean of per capita income.
The Greeks and Romans lived, I suppose, very comfortably though they had no linen. But in the present times, through the greater part of Europe, a creditable day-labourer would be ashamed to appear in public without a linen shirt.

Poverty can be defined objectively and applied consistently only in terms of the concept of relative deprivation...

Jun 2000 – Member States establish an Advisory Social Protection Committee (SPC)


Dec 2001 – At the Laeken European Council, EU Heads of State endorse the set of indicators, soon to be known as Laeken indicators.
INCIDENTALLY...
(if you are wondering where Laeken is located)

And this is the Royal Palace, where the Laeken indicators were officially established...
EU
Relative poverty lines

- The EU definition of relative poverty line:
  “Low income rate after transfers with low-income threshold set at 60% of median [equivalized] income, with breakdowns by gender, age (...)

- The line has EU official status.

- Also of interest Indicator 11 (“Dispersion around the low income threshold”). Three thresholds: 40, 50 and 70% of the median income.

- Jun 2006 – the SPC revises/updates Laeken indicators, but sticks to the relative poverty approach.
RELATIVE POVERTY

- **Common practice**: use a proportion of the **median** (or the **mean**) of the distribution of income as the poverty line. For instance:
  - (EU) PL = 60% median
  - PL = 50% mean

- **Problem**: You cannot rule out the possibility that poverty measures based on relative poverty lines are increasing functions of the mean (more growth → more poverty! or... depression → less poverty!)
An **awkward feature** of relative poverty lines is that a policy which raises the living standards of all, but proportionally more those of the rich, will **increase poverty**, notwithstanding the fact that the absolute living standard of the poor have increased!

The concept of **absolute poverty** is based on the assumption that individuals who fail to achieve a **minimal standard of living**, regardless of their relative position, are classified as poor.
POPULAR METHODS FOR SETTING ABSOLUTE POVERTY LINES

1) DIRECT CALORIE INTAKE (DCI)
   - Kakwani (2003)

2) FOOD ENERGY INTAKE (FEI)

3) FOOD-SHARE
   - Orshansky (1963, 1965)

4) COST OF BASIC NEEDS (CBN)
   - Rowntree (1901) + Ravallion (1994), among the others
THE FOOD-SHARE METHOD
Orshansky (1963)

\[ Z_{FS} = \frac{x_{food}}{\bar{w}_{food}} \]

- \( Z_{FS} \) is the **poverty line**;
- \( x_{food} \) is the cost of a food bundle achieving a certain calorie-intake level;
- \( w_{food} \) is the **average budget share for food** of some group of households deemed likely to be poor (e.g. bottom 3 deciles). Could also be a **normative value** (e.g. the cost of a nutritionally adequate diet);
- For instance, if \( w_{food} = 0.33 \), then the poverty line is the cost of food bundle multiplied by three.
Mollie Orshansky (1915-2006)

Source: www.socialsecurity.gov.
ORSHANSKY AND BiH
vol. II, where methods take centre stage

Bosnia and Herzegovina
Poverty Assessment
(In Two Volumes) Volume II: Data on Poverty
November 21, 2003

Poverty Reduction and Economic Management Unit
Europe and Central Asia Region
A. Extreme or Food Poverty Line

4.1 The first step in constructing a poverty line is to decide on a welfare measure at the level of the individual. The welfare measure used here is per capita annual consumption, as previously discussed. Individuals can be ranked on this basis by consumption level, from lowest to highest. The next step is to determine food consumption patterns, as a basis for constructing an extreme or food poverty line. Because our interest is in people at the lower end of the distribution, the analysis focuses on the average consumption patterns of the bottom 30 percent only, excluding the richer component of the population. As a matter of practice, we exclude the very poorest lowest 10 percent, for two reasons: (i) these people may be so poor that their consumption patterns are unrepresentative of any normal pattern and, (ii) their observed low levels of consumption may reflect measurement error. To avoid these potential difficulties, we use the data for individuals at the 10-30 percent consumption levels. This part of the sample is called the “reference” group.
ORSHANSKY AND BiH
The Food Poverty Line in 2001 = 760 KM (person/day)

Table 4.1 Converting Food Consumption Patterns into a Food Poverty Line

<table>
<thead>
<tr>
<th>Goods</th>
<th>Average Quantity (grams)</th>
<th>KCalories per kilogram</th>
<th>KCalories obtained</th>
<th>Adjusted KCalories</th>
<th>Adjusted quantities (grams/day)</th>
<th>Average Price per Kilogram, KM</th>
<th>Cost Per day (KM)</th>
<th>Cost per year (KM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>11.6</td>
<td>4150</td>
<td>48</td>
<td>29</td>
<td>7</td>
<td>1.63</td>
<td>0.01</td>
<td>4.2</td>
</tr>
<tr>
<td>Bread</td>
<td>189.0</td>
<td>2410</td>
<td>455</td>
<td>275</td>
<td>114</td>
<td>0.87</td>
<td>0.10</td>
<td>36.2</td>
</tr>
<tr>
<td>Poultry</td>
<td>27.0</td>
<td>820</td>
<td>22</td>
<td>13</td>
<td>16</td>
<td>4.77</td>
<td>0.08</td>
<td>27.9</td>
</tr>
<tr>
<td>TOTAL</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>...</td>
<td>759.86</td>
</tr>
</tbody>
</table>

Source: BHAS, RSIS, and FIS (2003). Note: Table shows only a partial listing for illustrative purposes. See Annex 2 for detailed description.
ORSHANSKY AND BiH

The Total Poverty Line in 2001 = 1438 KM (person/day)

General Poverty Line = Value of food consumption + Value of Non-Food Consumption

Where:

**Food Consumption** = Value of Food Poverty Line = 760 KM = 34.5% of GPL
Non-food Consumption = 65.5% of GPL

General Poverty Line = 760/0.345 = 2198 KM = 760 + 1438.

\[ Z_{FS} = \frac{x_{food}}{\bar{w}_{food}} \]
THE FOOD-SHARE METHOD
An Assessment

- **PRO** – *simplicity* + empirically well-grounded.

- **CON** – arbitrary in the choice of reference group over which the food budget share is calculated

- **CON** – potentially inconsistent.

Think of two groups with different average PCE. Households with higher PCE will have a lower $w_{food}$ (by Engel’s law), a higher poverty line, and hence higher poverty rates.
THE COST OF BASIC NEEDS (CBN) METHOD

- In a nutshell: identify a consumption bundle adequate to meet basic consumption needs and estimate its cost.

- **Question:**
  What constitutes a ‘basic need’ and what does not?

- **Constraint:**
  The choice of the basic-needs bundle should reflect local perceptions of what constitute poverty (specificity).

- **Solution (partial):**
  A safe start consists in including foodstuffs among the basic needs. After, we’ll think how to add an allowance for consumption of non-food goods/services.
1) Estimate the **cost** of a ‘basic food bundle’: this gives the **food poverty line**.

2) Estimate the **allowance** for ‘basic non-food goods’.

3) Add 2) to 1): this gives the **(total) poverty line**.
THE CBN METHOD
The Food Poverty Line

- We need to identify a “suitable” food bundle, and estimate its cost.
- “Suitable” food bundles achieve mean nutritional requirements and are consistent with local dietary habits.
- Nutritionists help with the identification problem.
The Food Bundle

Take the WB Poverty Update Report for Yemen, 2002:

- Mr. Baki – a local nutritionist – helped identifying the consumption levels of food commodities (grams/person/day) for the average Yemeni. The bundle corresponds to 2,523 kcal (person/day).

- The report sets the minimum energy requirement to 2,200 kcal (person/day).

- $\frac{2,200}{2,523} = 0.8719$ was used to scale down actual food consumption levels.
# THE BASIC FOOD BUNDLE FOR YEMEN

<table>
<thead>
<tr>
<th>Commodity</th>
<th>(Kg/person/year)</th>
<th>Commodity</th>
<th>(Kg/person/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>54.1</td>
<td>Carrots</td>
<td>3.3</td>
</tr>
<tr>
<td>Sorghum</td>
<td>16.9</td>
<td>Papayas</td>
<td>6.4</td>
</tr>
<tr>
<td>Maize</td>
<td>6.4</td>
<td>Watermelons</td>
<td>6.4</td>
</tr>
<tr>
<td>Barley</td>
<td>2.5</td>
<td>Cantaloupes</td>
<td>3.2</td>
</tr>
<tr>
<td>Millet</td>
<td>3.2</td>
<td>Bananas</td>
<td>6.4</td>
</tr>
<tr>
<td>White Flour</td>
<td>36.6</td>
<td>Oranges</td>
<td>3.8</td>
</tr>
<tr>
<td>Rice</td>
<td>7.6</td>
<td>Dates</td>
<td>3.8</td>
</tr>
<tr>
<td>Legumes</td>
<td>12.1</td>
<td>Mangoes</td>
<td>2.5</td>
</tr>
<tr>
<td>Red Meat</td>
<td>2.5</td>
<td>Grapes</td>
<td>6.0</td>
</tr>
<tr>
<td>Chicken</td>
<td>3.8</td>
<td>Vegetable Oil/Ghee</td>
<td>15.9</td>
</tr>
<tr>
<td>Fish</td>
<td>2.5</td>
<td>Sugar</td>
<td>15.9</td>
</tr>
<tr>
<td>Eggs</td>
<td>1.8</td>
<td>Salt</td>
<td>3.2</td>
</tr>
<tr>
<td>Milk (and Milk Products)</td>
<td>12.4</td>
<td>Spices</td>
<td>0.6</td>
</tr>
<tr>
<td>Yeast</td>
<td>2.2</td>
<td>Tea</td>
<td>1.3</td>
</tr>
<tr>
<td>Dark-colored Vegetables</td>
<td>19.1</td>
<td>Coffee</td>
<td>1.0</td>
</tr>
<tr>
<td>Green Vegetables</td>
<td>15.9</td>
<td>Coffee Husks</td>
<td>2.5</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>4.3</td>
<td>Various Juices</td>
<td>9.6</td>
</tr>
<tr>
<td>Potatoes</td>
<td>3.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
COST OF THE FOOD BUNDLE

The cost of the food bundle can be estimated separately for urban and rural areas in each governorate. In so doing, differences in the cost-of-living faced by population sub-groups are accounted for.
### Food Poverty Lines for Yemen 1998
(rial/person/month)

<table>
<thead>
<tr>
<th>Governorate</th>
<th>Rural</th>
<th>Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ibb</td>
<td>2,039</td>
<td>2,073</td>
</tr>
<tr>
<td>Abyan</td>
<td>1,928</td>
<td>1,921</td>
</tr>
<tr>
<td>Sana'a City</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Al-Baida</td>
<td>2,102</td>
<td>2,171</td>
</tr>
<tr>
<td>Taiz</td>
<td>2,082</td>
<td>2,095</td>
</tr>
<tr>
<td>Al-Jawf – Mareb</td>
<td>2,090</td>
<td>2,139</td>
</tr>
<tr>
<td>Hajjah</td>
<td>2,259</td>
<td>2,058</td>
</tr>
<tr>
<td>Al-Hodeida</td>
<td>2,008</td>
<td>1,921</td>
</tr>
<tr>
<td>Hadramout - Al-Mahrah – Shabwah</td>
<td>2,257</td>
<td>2,339</td>
</tr>
<tr>
<td>Dhamar</td>
<td>2,179</td>
<td>2,246</td>
</tr>
<tr>
<td>Sa’adah</td>
<td>2,222</td>
<td>2,246</td>
</tr>
<tr>
<td>Sana’a</td>
<td>2,045</td>
<td>2,110</td>
</tr>
<tr>
<td>Aden</td>
<td></td>
<td>2,089</td>
</tr>
<tr>
<td>Laheg</td>
<td>2,090</td>
<td>2,197</td>
</tr>
<tr>
<td>Al-Mahweet</td>
<td>1,990</td>
<td>2,104</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>2,103</strong></td>
<td><strong>2,083</strong></td>
</tr>
</tbody>
</table>
By analogy to the method adopted for the FPL, the allowance for non-food goods could be estimated by pricing a basic non-food bundle.

In practice, the arbitrariness implied by such an operation would lead to highly contentious estimates for the non-food allowance.

Ravallion and Bidani (1994) outlined a practical alternative.
ALLOWANCE FOR NON-FOOD GOODS
Lower Bound

Non-food allowance: expected non-food spending of households who can just afford the food poverty line in each governorate.

Survey data: (Food spending, Total spending)

Total spending of households having total expenditure = food poverty line

45°
Estimate the relationship between food- and total spending:

\[
w_h^F = \alpha + \beta_1 \ln\left(\frac{x_h}{z^F}\right) + \beta_2 \ln\left(\frac{x_h}{z^F}\right)^2 + \varepsilon_h
\]

\(\alpha\) gives the average food budget share of households having total spending = food poverty line \((x_h = z^f)\).

Hence, the (total) poverty line \(z\):

\[
z_{CBN} = z^F + (1 - \alpha) z^F = (2 - \alpha) z^F
\]
## Poverty Lines for Yemen 1998

<table>
<thead>
<tr>
<th>Governorate</th>
<th>Rural</th>
<th>Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ibb</td>
<td>3,268</td>
<td>3,223</td>
</tr>
<tr>
<td>Abyan</td>
<td>2,772</td>
<td>2,706</td>
</tr>
<tr>
<td>Sana’a City</td>
<td>3,147</td>
<td>3,132</td>
</tr>
<tr>
<td>Al-Baida</td>
<td>3,268</td>
<td>3,194</td>
</tr>
<tr>
<td>Taiz</td>
<td>3,268</td>
<td>3,194</td>
</tr>
<tr>
<td>Al-Jawf – Mareb</td>
<td>2,531</td>
<td>3,390</td>
</tr>
<tr>
<td>Hajjah</td>
<td>3,212</td>
<td>2,904</td>
</tr>
<tr>
<td>Al-Hodeida</td>
<td>2,954</td>
<td>2,803</td>
</tr>
<tr>
<td>Hadramout - Al-Mahrah – Shabwah</td>
<td>3,271</td>
<td>3,278</td>
</tr>
<tr>
<td>Dhamar</td>
<td>3,424</td>
<td>3,404</td>
</tr>
<tr>
<td>Sa’adah</td>
<td>3,458</td>
<td>3,392</td>
</tr>
<tr>
<td>Sana’a</td>
<td>3,323</td>
<td>3,303</td>
</tr>
<tr>
<td>Aden</td>
<td></td>
<td>3,315</td>
</tr>
<tr>
<td>Laheg</td>
<td>3,280</td>
<td>3,306</td>
</tr>
<tr>
<td>Al-Mahweet</td>
<td>3,019</td>
<td>3,054</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3,215</td>
<td>3,195</td>
</tr>
</tbody>
</table>
CONCLUSIONS & RECOMMENDATIONS

1) The choice of the poverty line affects both the level of poverty (its incidence, depth, ...), and its structure (the poverty profile). The implications for the policy maker are therefore substantive.

2) There is no single ideal method of setting poverty lines.

3) “Technical”, seemingly neutral, choices are, in fact, necessarily, inclusive of value judgments.
CONCLUSIONS & RECOMMENDATIONS

4) **Relative poverty** measures may **not be appropriate** for **developing countries**, where best practices follow the absolute approach to poverty measurement.

5) The **FS method** turns out to work well empirically, and stands out for its simplicity and “flexibility”.

6) The recommended method: The **Cost-of-Basic-Needs approach**.

7) Whatever the poverty line selected, it is important to carry out **sensitivity analysis**. This consists in testing the degree to which the results are sensitive to the choice of poverty line.


