Ethiopia Poverty Measurement Training

Day 5: Poverty Line Construction

Construct a New Line or Update the Old One?

And how to UpdateCosting

Updating the Old Line (1/2)

- If your surveys are highly comparable, in terms of questionnaire design and welfare aggregate construction, the default option is to use the old poverty line and update it for inflation
- Can use official CPI, need to know base of temporal deflation for both surveys, and use inflation between those two base periods
- Use headline CPI to inflate total poverty line (not food and nonfood components separately)

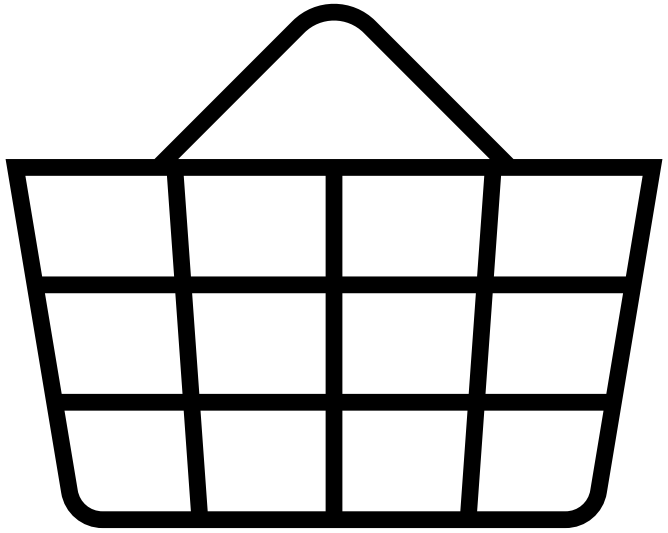
Updating the Old Line (2/2)

- CPI may
  - overestimate increase in the true-cost-of-living as it is a Laspeyres index
  - reflect consumption patterns of the country as a whole which can be different from that of households close to the poverty line
  - be based on urban prices only, and long term inflation trends in rural areas may be different
  - be politically motivated (artificially low to avoid COLA adjustments for civil servants)
- So can also use alternative indices constructed from the survey data
  - use budget shares from hh survey, or just a reference population close to the poverty line, and apply to price changes from the CPI at say first digit of COICOP level
  - cost food basket from previous survey at new national prices

Constructing a New Line

If you have implemented major revisions to the questionnaire or the methodology, construct a new line

If there have been major economic shocks which have dramatically altered the consumption patterns of households, construct a new line



Poverty Line Construction

- The World Bank recommends a Cost-of-Basic-Needs poverty line which is based on
  - cost of a basket of food actually consumed by poor people that provides enough calories
  - plus an allowance for non-food needs (constructed based on actual consumption patterns)

Food Component

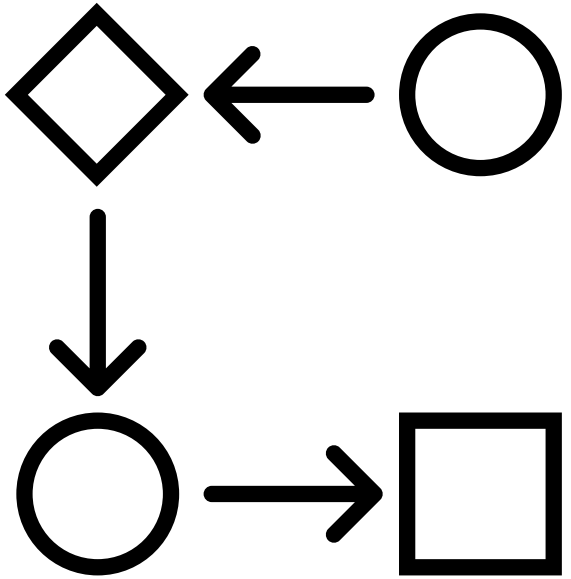
Basket Definition

Choice of Calorie needs

Costing

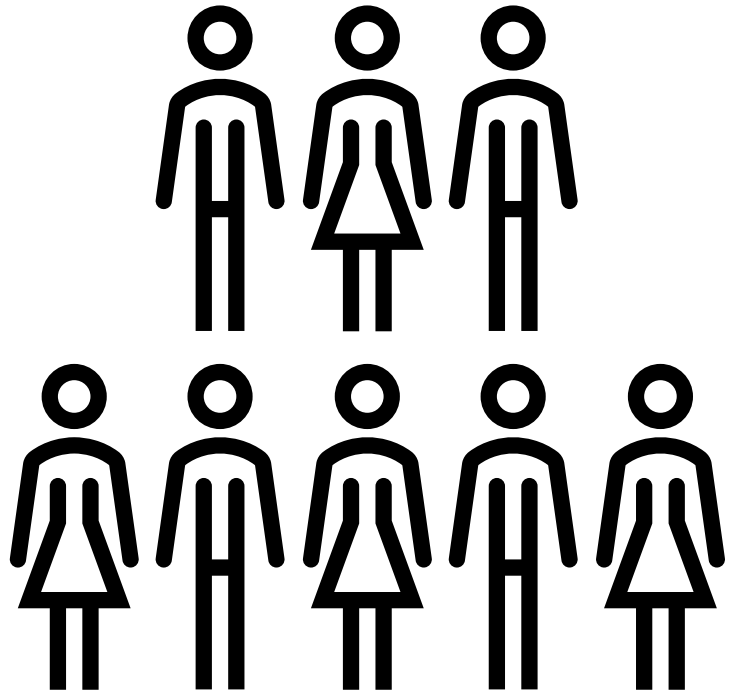
Choices and Steps

- Need to select:
  - Reference population
  - Foods to include in the basket
  - Total number of calories per capita or per AME
- Steps
  - Calculate the quantity of each food in the basket
  - Cost each food in the basket using p_0
- OR construct cost-per-calorie and multiply



Reference Population

- Composition of the basket should reflect the actual food consumption patterns of “poor” people
- The reference population defines exactly what we mean by poor
- Usually defined in terms of deciles (either of food consumption or total consumption), should exclude top and bottom deciles



Foods to Include

- Including every single food item from a survey (if there are hundreds) can be more trouble than it is worth.
  - Requires converting non-standard units to grams for every item
  - Requires finding calorie per 100 g values for every food item
  - Composite items (prepared meals) can be very heterogenous and thus difficult to construct meaningful prices / calorie values
  - Results in a huge basket that contains tiny amounts of rarely consumed foods
- Want to include a reasonable number of items that account for most of the food consumption of the poor across the country
- Often use target like foods that account for 80% or 90% of the total value of food consumption

Foods to Include – Prepared/Composite Foods

- Some countries include prepared meals, some do not
- Need to calculate cost per calorie
  - Can assume it is **the same** as the average for other items in the basket. Reasonable in cases where prepared meals are very similar to meals cooked at home and overheads / profit margins are very low
  - Can assume it is **a multiple** of the average of other items in the basket, usually in the range of 1.1 times to 1.5 times. Allows for additional costs of preparing and serving food, profit margins
  - Some countries do studies of restaurants, looking at nutritional content of food and the cost

Calorie Requirement

- Depends on choice of equivalence scale
- If using calorie-based scale, use calories for adult male
- If using per capita, apply population structure to calorie needs
- These are average calorie needs, significantly higher than “minimum” calorie needs FAO uses to get country-level minimum calorie requirements

age	coeff	calories	% of pop	for per cap
0 to 1	0.25	675	2.42	16.335
1 to 3	0.45	1215	8.87	107.771
4 to 6	0.62	1674	9.36	156.686
7 to 10	0.69	1863	12.10	225.423
11 to 14 M	0.86	2322	5.01	116.332
11 to 14 F	0.76	2052	4.49	92.135
15 to 18 M	1.03	2781	4.16	115.690
15 to 18 F	0.76	2052	4.40	90.288
19 to 50 M	1	2700	17.41	470.070
19 to 50 F	0.76	2052	21.11	433.177
51+ M	0.79	2133	5.10	108.783
51+ F	0.66	1782	5.58	99.436
				2032.125

If using calorie-based

If using per capita

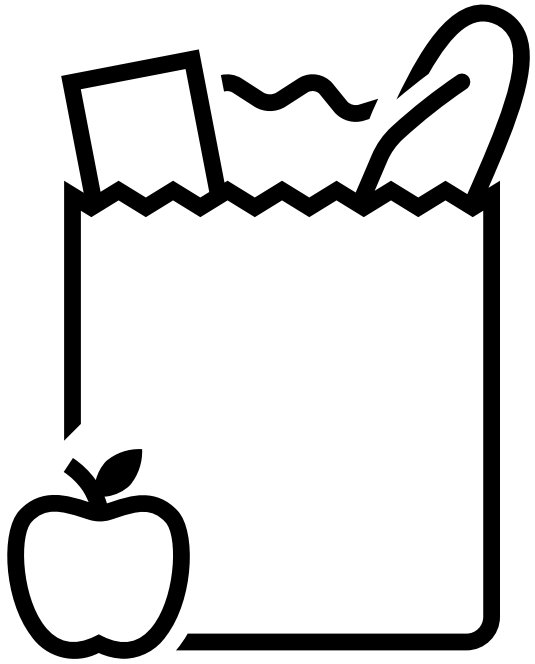
Quantities for Basket - Explicit

1. For the selected foods, compute the total amount in grams consumed by all households in the reference population per day
2. Merge in information on calories to get total calories for each food
3. Divide by the total adult male equivalents to get calories per AME
4. Sum over all food items to get total calories in this basket
5. Scale up quantities so that the basket contains the target number of calories
6. Use the p_0 to compute the cost of the basket

*For some surveys, step 1 was not done. Instead: For the selected foods, compute the total value of consumption by all households in the reference population per day, merge in base cost per kg, divide total value of consumption by the base cost per kg to get total amount in kg

Cost-per-Calorie Approach

- Cost per calorie method – two variations
  - Plutocratic: calculate (weighted) total calories consumed by reference population and total (weighted) value of food consumed (using only selected items to avoid having to calculate calories for hundreds of food items)
  - Democratic: compute cost per calorie (using only selected items) for each household in the reference population, then calculate (weighted) average
- Scale up to cost for target number of calories
- Computationally the easiest
- Plutocratic should be equivalent to explicit basket
- Don’t get actual basket quantities which can be a useful check



Evaluating the Basket

- In every context I know of, the basket is picked just to provide a certain number of calories
- Can easily use food composition tables to see how much protein, vitamin A etc the basket provides, and if this meets nutritional standards
- With slightly more work could construct a basket that meets multiple minimum requirements, in terms of calories, protein etc

Nonfood Component

Ravallion methodology

Ravallion (1998)

- Proposed an upper and lower bound on the nonfood component, based on how households actually balance food and nonfood needs
- Assumes hierarchy of needs:
    1. Survival food needs
    2. Basic non-food needs
    3. Basic food needs

Food Poverty Line is (1) + (3). Want to determine appropriate value for (2)

Upper Bounds

- Consider someone whose food spending equals the food poverty line (1)+(3).
- This person must have already met all their basic nonfood needs, so their nonfood expenditure must be greater than (2).

Lower Bounds

- Consider someone whose total spending equals the food poverty line (1)+(3).
- This person has sacrificed basic food needs to purchase basic nonfood needs, so their nonfood expenditure must be less than (2).

Estimating

- Ravallion recommends a nonparametric method to estimate.
  - For upper bound: for values of x from 1 to 10
    - Calculate average total nonfood consumption per AME [capita] for households whose food consumption is within x% of the food poverty line
  - Take the average of these 10 averages, this is the nonfood component
- Some countries use a simpler approach and just take the average nonfood expenditure for households whose food consumption is within 10% of the food poverty line.
- For lower bound, replace food consumption with total consumption.

Robustness

- Constructed via Ravallion, the poverty line is somewhat robust to exactly what is included in aggregate.
- Using the international poverty line, poverty rates will automatically decrease if you include more things (like hospitalization) in the aggregate.
- Using a line constructed via Ravallion, if could go either way. For things that are distributed roughly the same as the overall aggregate, there will be little change in the poverty rate.

Construction

- Poverty line is cost of basket + nonfood component calculated via Ravallion
- Expressed per capita or AME in overall national prices
  - The welfare aggregate is also in these terms, this is usually how we do the calculations of poverty, equality etc
- For some purposes, it may be helpful to express the poverty line in terms of total needs for a family of 5 (say) in the prices in different parts of the country.