Measuring Poverty in India

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Why measure poverty?

- As an indicator of development
- As a factor in determining centre-state fiscal transfers and the targeted PDS
- To identify members of the ‘BPL’ category who are eligible for various government schemes. (Less important now due to universalization of MGNREGA, and other criteria for specific schemes).
Measuring poverty: Sen’s axioms

- **Focus:** the poverty index depends only on the incomes of the poor
- **Monotonicity:** a reduction in the income of a poor person must increase the index
- **Weak Transfer Axiom:** redistribution from a person below the poverty line to someone better off, leaving the number of persons below the poverty line unchanged, must increase the index.

Let $y_i =$ income of $i^{th}$ person, $z =$ poverty line, $q =$ no. below poverty line, $n =$ population

- **Head count ratio (HCR) = $q/n$**

- Measures extent of poverty but ignores its “depth”
- Violates both monotonicity and WTA
- Encourages policies directed at those just below poverty line, even if they make poorer persons worse off.
\( y_i \) = income of \( i \)th person,  
\( z \) = poverty line,  
\( q \) = no. below poverty line,  
\( n \) = population 

**Poverty-gap ratio**  

\[
\frac{1}{n} \sum_{i=1}^{q} \frac{z - y_i}{z}
\]  

- Measures total income shortfall of the poor  
- Measures “depth” of poverty  
- Satisfies monotonicity but violates WTA  

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**Foster-Greer-Thorbecke (FGT) indices**  

\( P_\alpha = \frac{1}{n} \sum_{i=1}^{q} \left( \frac{z - y_i}{z} \right)^\alpha < 1 \)  

- \( P_0 \) = HCR  
- \( P_1 \) = PGR  
- \( P_2 \) = Squared PG: measures “severity” of poverty and satisfies all three axioms
The Indian poverty line: Old method

- Measures *absolute* poverty in terms of a minimum level of *monthly per capita expenditure (MPCE)*.

- Until recently, the poverty line was based on a methodology proposed by the Alagh Committee report (1979): the level of MPCE that allowed households to meet *calorie norms* established in the early 1970s.
  - 2100 kcal/person/day in urban areas
  - 2400 kcal/person/day in rural areas
- These norms were for an ‘average’ individual: a weighted average of ICMR (1968) recommended age/sex/activity-specific calorie norms, weighted by population shares of the 1971 census.

*Sometimes referred to as per capita total expenditure (PCTE)*

- The calorie norm was converted into money terms using data from the 1973-74 NSS Consumer Expenditure Survey (CES), as follows:
- CES collects data on household’s monthly
  - consumption expenditure, itemwise
  - quantity consumed of each food item → calculation of total calorie intake per day.
- Dividing both by household size gives rural and urban “calorie Engel curves” relating calorie intake per capita per day to MPCE across households.
- The relevant calorie Engel curve was used to determine at what level of MPCE were households consuming 2100/2400 calories per capita in 1973-74. (But MPCE data is grouped, so *inverse interpolation* was used.)
- *These MPCE levels gave the national urban and rural poverty lines for 1973-74.*
• On this basis, poverty line was approx Rs 49 per capita per month in rural areas and Rs 57 in urban in 1973-74.

• The bundle of goods consumed by households at the poverty lines are the poverty line baskets (PLBs).

• For later years, these poverty lines were updated by various price indices: i.e. the poverty line for each year was the fixed 1973-74 PLB revalued at current prices.

• After the report of the Lakdawala Expert Group (1993), poverty lines were translated into statewise poverty lines using state-specific consumer price indices, and thereafter updated annually using statewise CPIIW for urban and CPIAL for rural (but with weights corresponding to expenditure shares in the MPCE of households near the poverty line in the 1973-74 CES).

• HCR and other poverty measures were obtained from these updated poverty lines using statewise distribution of household MPCE from each year’s CES, separately for urban and rural.

• For each state, HCR x population = number of BPL individuals (poverty count), separately for urban and rural.

• Summation of state poverty counts / national population = national HCR (separately for urban and rural)

• All-India poverty lines were calculated so as to give the same national urban and rural HCRs using the national distribution of MPCE.
Bottom line:

- According to the above procedure, India’s poverty line in principle preserved the real value of the 1973-74 poverty lines, defined as the MPCE levels at which households were consuming the calorie norms in that year.
- So a household was not “poor” in year $t$ if it was able to afford this 1973-74 PLB at prices of year $t$.
- This is regardless of whether it was actually consuming food sufficient to meet the calorie norm or any other nutritional norm (e.g., proteins or micronutrients).
- Also regardless of whether its non-food consumption on basic needs (e.g. expenditure on health and education) meets any norm.

Debates and controversies

1. Divergence between NSS and NAS consumption figures.
2. Updating the poverty lines using price indices with outdated weight-base.
3. Divergence of poverty lines from calorie norms; HCRs calculated from PLs are only weakly correlated with anthropometric indicators of extent of malnutrition. [Covered in detail in Module 2].
1. NSS – NAS divergence

- Private consumption estimated by NAS is much higher than the aggregate inferred from NSS CES, and the gap has been growing: NAS figure is now about double the NSS figure.
- S. Bhalla: NSS consumption is under-reported; we should scale it up for all MPCE groups by the proportion required to reconcile with NAS. This reduces HCR to < 15%.
- But:
  - This adjustment unjustifiably assumes that the NSS mean is wrong but the distribution is right. Under-reporting of consumption in the NSS is most likely at higher MPCE levels, so proportionate scaling up at all levels is incorrect.
  - For many specific items, NSS consumption figure is higher than NAS.
  - NAS consumption figures are residuals after deducting I+G+X-M from GDP, but estimates of private capital formation are based on crude estimates.
  - Some items allocated to C in NAS have no counterpart in NSS

2. Updating poverty lines does not adequately capture inflation

- The CPIAL and CPIIW used to update the official poverty lines used weights corresponding to expenditure shares in the 1983-84 CES. Lakdawala Committee recommended using expenditure shares of households at the PL in 1973-74. This gave food a very high weight in the index. But consumption patterns have changed drastically since then, with a fall in the share of food, even for the poor.
- During 2000-2010, cereal prices were relatively stable or declining relative to other prices, so the high weight assigned to them makes the price indices used to update poverty lines understate inflation in the cost of the actual consumption baskets.
Background information on CES

- CES is conducted annually, but with a much larger sample roughly every 5 years (quinquennial ‘thick’ rounds).
  - 50th: 1993-94
  - 61st: 2004-2005
  - 66th: 2009-10
  - 68th: 2011-12

Changing Reference/Recall Periods

- Upto the 61st Round (2004-05) CES used a 30-day Uniform Reference Period (URP)
- In the preceding decade it also experimented with a Mixed Reference Period (MRP) of 365 days for infrequently purchased items (clothing, footwear, durables, education, and institutional health care), and 30 days for all other items.
- For the 66th Round (2009-10), it used both MRP and Modified MRP (MMRP) with 365 day recall for the low-frequency items, 7 days for some food items, 30 days for remaining food items + fuel & light + misc goods & services incl non-institutional medical + rent + taxes.
- Only MMRP will be used henceforth.

- Abandon calorie norms and measure poverty as consumption deprivation rather than calorie deprivation.
- Instead of separate poverty norms for rural and urban, use a single poverty line basket, based on the consumption pattern at the existing urban poverty line of 2004-05, because:
  - Revised poverty lines should be based on some “generally acceptable aspect of current practice”.
  - Existing urban HCR is less controversial than rural, and is close to anthropometric measures of malnutrition while rural HCR is much lower.
  - Urban PLB represents a better and preferable living standard as compared to rural PLB.
  - PLB based on actual consumption pattern observed in 2004-05 is more relevant than updating the 1973-74 PLB.
- Use MRP instead of URP data from CES (because of change in NSS procedure).
- New reference poverty line was Rs 579 MPCE, giving HCR 37.2% in 2004-05, as against 27.5% by old method.


- Rejects Tendulkar Group’s recommendation of a single all-India PLB.
- Returns to earlier approach with separate urban and rural PLs based on MPCE level adequate to meet revised nutritional norms, but with additional allowance for minimum non-food consumption.
- 2010 ICMR norms for each age/sex/activity are used for minimum protein and fat requirements in addition to calories.
New calorie norms

- Based on 2010 ICMR calorie norms: 2155 (rural) and 2090 (urban). These are lower than the 1968 norms because:
  - Calorie requirements have fallen for each age/gender/activity category because of lifestyle changes. This accounts for 60% of the reduction.
  - Shift in the structure of the population from heavy towards moderate and sedentary occupations (40%).
- The report further reduces these norms by 10%.

- Food component of the recommended new PLs is the MPCE levels in the NSS 68th Round (2011-12) at which the norms for all 3 nutrients are met.
- Non-food component is based on
  - actual median expenditure on 4 essential items: education, shelter, clothing and mobility
  - actual expenditure on all other items of the fractile class that meets the nutrient norms.
Resulting PLs for 2011-12: MPCE of Rs 972 (rural), 1407 (urban). These are resp 19% and 47% higher than those calculated by Tendulkar method for the same year. HCRs are correspondingly higher.

- The increase is partly due to the additional norms (esp non-food essentials, mainly responsible for the increase in urban PL), partly due to shift from MRP to MMRP (mainly responsible for increase in rural PL).
- For intertemporal comparisons, MRP equivalent of MMRP-based Rangarajan PLs can be calculated for 2004. Decrease in HCRs from 2004-11 is almost the same by both methods.

Extending to statewise PLs and updating over time

- The all-India PLs are converted to state-specific urban and rural PLs by constructing spatial price indices, using implicit prices (unit values) derived from CES value and quantity data for items for which quantities are reported. The same inter-state price differentials are assumed for all other items.
- Recommendation to update the PLs for future years by using Fisher’s Ideal Index numbers based on price relatives, using unit values derived from the CES of the relevant year for food items and CPIs for others – minimizes the problem of outdated weights.
Criticisms of the Rangarajan Report

- Should have proposed a multidimensional deprivation measure instead of a level of consumption expenditure.
- Should have tried to reconcile NAS and NSS consumption figures instead of rejecting NAS.
- Revised ICMR calorie norms are not relevant for people at the poverty line.
- Determination of minimum food expenditure based on PLB of the household meeting all 3 nutritional norms ignores diversity of dietary patterns in India.

Readings


*All readings are in the course folder. They contain a lot of material that was not covered in class, which you should try to understand on your own.*