Poverty measurement in Latin America: A regional needs-based poverty line

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Regionally comparable poverty lines

• ECLAC regularly produces poverty estimates for 18 Latin American countries since the early 80s.
• ECLAC poverty measures are aimed at regional comparability.
  • National poverty figures are not directly comparable, even when based on a common methodological approach.
• “Comparability” comes from the application of the methodology with the greatest possible homogeneity in all countries.
• The methodology for setting needs-based poverty lines was recently updated (ECLAC, 2019).
  • Based on the most recent survey expenditures (HBS or LCS)
  • Standard “cost-of-basic-needs approach” framework
  • Detailed documentation of processes
• This approach has also been recommended in the Report of the Commission on Global Poverty (2017) (Recommendation 15)
Structure of the methodology

Selection of reference population (RP)
- Provides data on expenditure structure and food prices

Construction of basic food basket
- Selection of products for the basic food basket
- Adjustment of quantities to meet calorie requirements and macronutrient requirements
- Calculation of cost per kilocalorie (CKC) of the basic food basket

Calculation of extreme poverty or indigence line (IL)
- Corresponds to the value of the basic food basket and may be expressed as $IL = CR \cdot CKC$

Calculation of the non-food component of the poverty line (PL)
- Selection of non-food spending items
- Orshansky coefficient (OC) = total expenditure/food expenditure
  $PL = IL \cdot OC$
Data sources

• Expenditure surveys from 18 countries
  • Either “Income or Expenditure” or “Living Conditions” surveys
  • Latest available until 2015

• Food composition tables
  • Single table, based on:
    • USDA Nutrient Database for Standard Reference
    • Table of food composition of Central America (INCAP / PAHO, 2007)
    • Selected products from national tables
  • Edible portion & Kilocalories and nutrients (per 100 net grams)

• Energy & nutritional requeriments
  • Estimation based on FAO/WHO (2004)
Reference population

• The reference population provides the information for:
  • Structure and prices for the food basket
  • Structure of food / non-food consumption

• It should be a group whose consumption habits are appropriate to represent a standard of “sufficiency”.
  • We look for an intermediate point between a situation of need and a situation of abundance

• How to identify a group with an appropriate standard of living?
• Option 1: Use an exogenous indicator of sufficiency
  • Selection by “apparent caloric intake”
• Option 2: Determine the sufficiency endogenously
  • Convergence between the reference population and the poverty rate

• But both of them are affected by “caloric intake”, which is not measured in a comparable manner.
Reference population: inadequacy of traditional methods

Calorie intake, by per capita income moving quintile, urban areas

A. Countries with a per capita GDP of under US$ 2,500
(Constant 2012 dollars)

Source: ECLAC (2019), Income poverty measurement. Updated methodology and results.
Reference population: inadequacy of traditional methods

B. Countries with a per capita GDP of over US$ 6,000
(Constant 2012 dollars)

The "iterative method" is also sensible to the caloric intake measured by the survey.

Given that:

- $E_i = Kcal_i \times \text{Cost}_{\text{per}_i} Kcal_i + NFE_i$
- $PL = Kcal_{\text{Req}} \times \text{Cost}_{\text{per}_i} Kcal_i + NFE_i$

(E = Expenditure; Kcal = Caloric intake; NFE = non-food expenditure; PL = poverty line)

For simplicity, convergence is defined as $E_i = PL$.
- Thus, it requires that $Kcal_i = Kcal_{\text{Req}}$
Proposed solution: reference population based on multiple deprivations

- Find a group of households, sorted by income, that adequately meets a set of needs (not just food)
  - Households in groups of 20 centiles (“mobile quintile”) of per capita income
  - Selected group is the first to achieve 10% or less of households with 2 simultaneous deprivations
  - One group selected at national level. Subnational groups can be extracted to estimate disaggregated poverty lines (urban-rural, etc.)

- "Sufficiency" criteria: households that satisfy a set of deficiencies (common in the NBI method):
  - Food
  - Education
  - Basic services
  - Housing

- “Concordance” criterion: the reference population must have an average expenditure that is not less than the poverty line obtained (iterative process).
Example: critical deprivations, by moving quintile
(Percentage of households)

Source: ECLAC (2019), Income poverty measurement. Updated methodology and results.
Latin America (10 countries): households with 2 or more critical deprivations, by moving income quintile

(Percentages)

Source: ECLAC (2019), Income poverty measurement. Updated methodology and results.
Latin America (10 countries): households with 2 or more critical deprivations, by moving income quintile

(Percentages)

Source: ECLAC (2019), Income poverty measurement. Updated methodology and results.
Basic Food Basket

• The BFB provides a monetary reference on the cost of satisfying food needs

• Based on the spending patterns of the reference population
  • Most representative products of the population's consumption.
  • Items acquired by at least x% of households (x% selected to attain a 60 product basket)
  • Items valued at median prices

• Basket should be compatible with an “adequate” diet, as otherwise it would be underestimated
  • An adjustment is made to comply with recommended macronutrient structure.
    • Increasing or decreasing the relevant food groups in the same proportion.
    • (For example, increase the groups "legumes", "meats, poultry, fish and eggs" and "dairy" to increase protein).
  • No adjustments made for micronutrients, as they are largely discrentional.
  • For most nutritional outcomes, the resulting BFBs allow purchasing a healthier basket.
    • Substitution of nutritionally inefficient items, which are not necessarily cheaper (e.g. out-of-household foods).
Latin America (18 countries): macronutrient structure of basic food baskets

![Graph showing macronutrient structure for 18 Latin American countries from 2004 to 2014.](image)

**World Health Organization population nutritional targets, 2003**

*(Percentages of total energy)*

<table>
<thead>
<tr>
<th>Dietary energy source</th>
<th>Nutritional Intake goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total fats</td>
<td>15-30</td>
</tr>
<tr>
<td>Total carbohydrates</td>
<td>55-75</td>
</tr>
<tr>
<td>Proteins</td>
<td>10-15</td>
</tr>
</tbody>
</table>

Latin America (18 countries): cost structure of basic food baskets (urban areas)

Source: ECLAC (2019), Income poverty measurement. Updated methodology and results.
Non-food component

• As with the BFB, it is desirable to include the most representative products and exclude those not consistent with the notion of a “basic” basket.

• Product selection based on percentage of households that purchase the item.
  • General threshold of at least 10% of households.
  • Some categories were included completely:
    • Primary and secondary education
    • Public transport
    • Housing rental
    • Basic housing services

• The non-food component is expressed by the "Orshansky coefficient" (total expenditure / food expenditure).
Latin America (18 countries): cost structure of non-food component (urban areas)

Source: ECLAC (2019), Income poverty measurement. Updated methodology and results.
Poverty line

• Extreme Poverty Line = Caloric requirement x Cost-per-calorie
• Poverty Line = EPL x Orshansky coefficient

• Updating over time:
  • EPL by changes in Consumer Price Index for food
  • Non food component by Consumer Price Index for non-food goods and services
Income

• ECLAC household surveys databank covers 1990 to 2018, but updated poverty series estimated only from 2000 onwards.

• Income definition
  • Corresponds mainly to “total income”, but in some countries wages and salaries are reported net of taxes (closer to “disposable income”)
  • Review of income components according to international recommendations (Canberra Group)
  • Includes imputed rent for home-owners, but truncated (max. value equal to total monetary income of household)

• Imputation for income missing values
  • Hot-deck for income from work and pensions (if not already corrected in official survey databases)
The “adjustment to National Accounts” procedure applied by ECLAC in its previous series is discontinued.

Surveys underestimate income, but discrepancy with National Accounts cannot be attributed entirely to limitations of the survey.
- “Household account” of NA available in less than half of LA countries.
- Size of discrepancy is not explained by quality of the survey.
- In some cases variation of NA income has been considered less reliable than the survey (for example Chile experience).

Distribution of underestimation requires additional information
- Underestimation comes also from lack of respondents, not only values declared.
- Greater consensus towards “adjusting” only top incomes, based on tax records.
- (Implies underreporting is less relevant for poverty measurement).
Some results

**Latin America (17 countries): extreme poverty and poverty lines around 2016**

*(Purchasing power parity dollars per person per month)*

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<table>
<thead>
<tr>
<th>Country</th>
<th>Extreme Poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bolivia (Plur. State of)</td>
<td>232</td>
</tr>
<tr>
<td>Brazil</td>
<td>180</td>
</tr>
<tr>
<td>Chile</td>
<td>202</td>
</tr>
<tr>
<td>Colombia</td>
<td>217</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>176</td>
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<tr>
<td>Ecuador</td>
<td>96</td>
</tr>
<tr>
<td>El Salvador</td>
<td>72</td>
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<tr>
<td>Guatemala</td>
<td>207</td>
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<tr>
<td>Honduras</td>
<td>229</td>
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<tr>
<td>Mexico</td>
<td>224</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>104</td>
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<tr>
<td>Panama</td>
<td>187</td>
</tr>
<tr>
<td>Paraguay</td>
<td>81</td>
</tr>
<tr>
<td>Peru</td>
<td>113</td>
</tr>
<tr>
<td>Dominican Rep.</td>
<td>94</td>
</tr>
<tr>
<td>Uruguay</td>
<td>205</td>
</tr>
<tr>
<td>Venezuela</td>
<td>263</td>
</tr>
<tr>
<td>Latin America (Bol. Rep. of) (simple average)</td>
<td>209</td>
</tr>
</tbody>
</table>

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*Notes:

a. Data from 2016.
Latin America (18 countries): Extreme poverty and poverty rates, ECLAC estimations and national official figures

* Official poverty figures correspond to households, not individuals
Final comments

• The proposed methodology achieves comparable needs-based poverty lines ...

• ... but comparability of data sources can still be largely improved:
  • Measurement of food expenditure
    • More evidence is needed on the differences between instruments, especially recall vs diary.
    • Measurement of out-of-household food expenditure should be prioritized.
  • Measurement of income
    • Household surveys underestimate income, but National Accounts do not necessarily provide a reliable reference.
    • More information is needed on the inputs and assumptions involved in the estimation of the “household account” from NA.
    • Household surveys in LA would highly benefit from more comprehensive quality assurance processes.