Designing a CPI in a developing country
Some experiences

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Background

- CPI manual an important reference document
  - But short on specific advice and recommendations
  - Many small/medium developing countries in the world with similar conditions which need more concrete, specific advice.
- El Salvador:
  - Small country with 5.7 million people in Central America and a small land area.
  - Economy divided between a modern sector and a traditional sector
  - Staff resources: 33 including 25 price collectors and 6 with academic training
- Project is a complete CPI redesign based on a new HBS. This presentation includes a selection of issues:
  - Product selection and outlet sampling
  - Elementary aggregation and selection of product offers
  - “Monthly pseudo-chaining”
  - Replacements
  - Special products
  - Central price collection
Product selection and outlet sampling

- Use amount of expenditures as the main guiding principle for product selection.
  - Products with more than, say, 0.1% of total expenditure should normally be included.
  - Those below, say, 0.05% should normally be grouped together to be represented by one of its members, with the relatively largest expenditure.

- Sample sizes proportional to product weight, is a robust rule of thumb, if standard deviations are not fully analysed.
  - Allocation rules complex since different aggregation levels and time horizons (12-month, 1-month etc.) are involved.
  - Over-allocation of products with known volatile prices (fresh foods such as fruits and vegetables) and
  - Under-allocation of products with more stable prices (household durables) could complement this rule.
Elementary aggregation and selection of product offers

- **The geometric mean should be used**
- **The most sold criterion should then be applied in each outlet**
  - *within a wide product specification*
  - *in order to achieve maximum representativity of the sample.*
  - *An old tradition asks for tight, homogeneous specifications. Motivated by the use of the Dutot formula but not when Jevons is used*
  - *(This is another advantage of Jevons over Dutot, since it allows for a more representative sample.)*
“Monthly pseudo-chaining”

- Monthly pseudo-chaining is a useful calculation technique that facilitates the handling of non-comparable replacements and overlaps.
- A separate calculation is done between each two consecutive months, which is then linked to the index for the last month according to:

\[ I^{0:t} = \sum w_i^b I_i^{0:t-1} I_i^{t-1:t} \]  
(par. 9.84 of CPI Manual)

- Without pseudo-chaining, new base prices for the *initial base period* will have to be imputed each time non-comparable replacement occurs, which is a much more complex procedure to implement.

- The algebra around the this procedure is simple but needs to be spelled out and explained.
Replacements

- Distinction between comparable and non-comparable replacements
  - Comparable go into the index without adjustment
  - Non-comparable are excluded
  - Easy to criticize on theoretical grounds
  - Yet, for most products (not cars and PCs) it appears to work comparatively well in practice (IQI analysis)
  - Not easy to devise a better method for a country with limited staff resources.

- Exclusion of temporarily reduced prices is a way to avoid “clothing bias” caused by the end-of-sale reductions
  - In El Salvador we apply this rule for all products except technological products
Special products

- Simple user profiles are a useful method for covering mobile phone tariffs
  - Mobile tariffs appear to have the same complexity everywhere!
  - Difficult method but no simpler one could provide reasonable index?
  - Data on mobile phone use and expenditure available in HBS.
- The monthly chaining method is a practical and robust method for PCs.
  - It needs to be carefully implemented, however.
  - In each outlet a number of models needs to be followed.
  - New models have to be introduced each time an old model disappears.
  - The basis for the introduction of new models must be large sales value and not similarity with outgoing models.
  - Hedonics is too complicated for many countries.
Central price collection

- Central price collection for certain products, where prices are not easily observed in outlets should be used.
  - It is important to realize the presence of weight and other useful information existing in websites of companies, regulatory agencies etc.
  - Used for education, electricity, cars, water and sewage, airfares, bus fares …