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 …*