ICP Task Force on
Country Operational Guidelines
and Procedures

Sub –National PPPs

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Progress on:
• Manual/Paper on Sub-national PPPs with case studies from countries.
• Short overview of sub-national consumer spatial price indexes in Italy

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1. Potential and current uses of sub-national SPIs
   - Spatial price level analysis
   - Comparisons among different sub-areas (including urban and rural areas) of real disposable income of the households
   - Poverty analysis, essentially at local/small areas
   - Allocation of funds to reduce disparities and alleviate poverty (national and sub-national policy makers)
   - Wage adjustments
   - Interest in poverty-specific SPIs

2. Approaches to compute sub-national SPIs
   - Basket Products Cost Approach
   - One product or service basket approach (essentially sub-national SPIs for rents)
   - Unit value approach
3. Methodological general framework using the basket of products
   • Presentation of the approaches and formulae used, taking into account of the data available
   • Computation of SPIs at group of products level (Basic Headings)
   • Aggregation above group of product level

4. Computation by using the basket product cost approach: different objectives
   • Computation of sub-national PPPs comparable with the national PPP
   • Computation of Spatial Adjustment Factors (SAFs)
   • Sub-national consumer SPIs based only on CPIs data by using COICOP Classification

Summary presentation of the sub-areas covered, and of data and methods used for the computation, highlighting the advantages and the difficulties
4.1 Computation of sub-national PPPs comparable with the national PPP

- Under the “supervision” of the experts of the ICP Global Office and or Regional Agencies
- Through the Asian Development Bank:
  - Computation of Sub-national PPPs, for Philippines, Bangladesh and Malaysia
  - Technical assistance People’s Republic of China, India, Indonesia, Vietnam and Thailand

- Through the United Nations Economic and Social Commission for Western Asia
  - Computation of Sub-national PPPs for the United Arab Emirates

- Other related activities
  - Statistics South Africa and African Development Bank, at country level
  - Practical steps to enhance the level of the integration of the collection of CPI and ICP data (Kelly, South Africa)
  - Integration of CPI and ICP data proposals: Statistics India and Morocco
4.2 Computation of Spatial Adjustment Factors (SAFs)

• **Statement** of the European Parliament and Council
• **Eurostat report**: most countries’ report SAFs equal 1 for all BHs and some countries reports SAFs only for selected BHs. Most of the **NSIs do not publish** information on **SAFs**!

• **UK Office for National Statistics (ONS)** - computation every 6 years of the “Relative regional consumer price level of goods and services”

• **Turkish Statistical Institute** - SAFs and “Regional price level differences for consumer goods and services”

4.3 Sub-national SPIs for Household consumption based only on CPIs data by using COICOP Classification (a)

• **Official Computations**
  • **US Bureau of Economic Analysis**, computes “Regional Price Parities” at very detailed level, by using also data on rents (Aten)
  • **Western Australia** computes “Regional Price Index”
  • **Istat (Italy)**, computed and published sub-national consumer SPIs and conducted a lot of experiments and now has a specific project in the National Statistical Plan.
4.3 Sub-national Consumer SPIs based only on CPIs data by using COICOP Classification

- **Insee (France)**, conducts and publish every 5 years computation of Consumer SPIs for Metropolitan France and oversea departments

- Work by researches:
  - The **Czech Republic** (used also Small Area Estimation methods for obtaining results for smaller areas)
  - **Poland** (for the estimation at Nuts-3 regions applied a multiple imputation approach)
  - **Germany** (published as *Discussion Paper* of the *Deutsche Bundesbank*, organized an “ideal” micro-data set of prices, and used an identification of pair of only perfectly matching product and a multi-stage version of the CPD method)

5. Some important evidences and possible suggestions

- The **methods** of price aggregation do **not entail big problems**

- The computation of **sub-national PPPs** comparable with the national PPP and the computation of **SAFs proved to be difficult, costly and do not satisfy** the need of the national and local **policy makers** (request SPIs for very small areas).

- Most of the **NSIs** prefer to **compute sub-national consumer SPIs**
5. Some important evidences and possible suggestions (cont.)

- To convince the NSIs to compute sub-national SPIs, could be better to ask them to start with the computation of **sub-national consumer SPIs** based only on CPI data.
- Some **international guidelines** are, in any case, necessary in order to obtain sub-national consumer SPIs comparable.
- It is important to **invest resources to reach a real harmonization of the methods to compute CPIs** in all the countries involved in the ICP.
- Important to construct an “ideal” micro data base: it is necessary to work in a framework as an ideal **multistage stratified sample design**
- Possible use of the **Small Area Estimation methods** to obtain the weights at detailed area level
Biggeri-Laureti: Sub-national consumer Spatial Price indexes in Italy

1. **First official Sub-national consumer SPIs computed by Istat** (called PPPs)

   In **2010** (with reference to 2009) **CPI data** and **ad hoc surveys**

   - **Results**: price levels in the Northern regional capital are generally higher than those in the Centre-Southern Italy (**all items**: min: 93.8 max: 105.6; **Food**: min: 91.0 max: 108.0; **Housing**: min: 85.6 max: 112.8)
   - **Limits and drawbacks**:
     - A **time consuming labor-intensive preliminary analyses**, extensive data editing **was necessary for using CPI data**
     - High costs for carrying out **ad hoc surveys**
     - Spatial comparisons involved **only 20 Italian regional capitals**
   - **Various solutions to overcome the issues**
     - Implementing a string matching algorithm; Widening the use of electronic devices; feasibility additional surveys for ICP list of products
2. Istat’s project for computing sub-national PPPs

- ISTAT has planned to regularly produce spatial price consumer indexes at regional level by including a specific project in the National Statistical Plan.

- The project is developed within the European Multipurpose Price Statistics framework and is aimed at compiling sub-national PPPs for household expenditure by using a multi-sources approach:

  1. Data collected for compiling official CPIs through the local survey carried out by the Municipal Statistical Offices of the Provincial Capital.
  2. Scanner data obtained from the modern retail trade.
  3. Administrative data sources,
     - Database of fuel prices from Ministry of Economic Development.
     - Database on rents from the Real Estate Market Observatory (OMI, Osservatorio del Mercato Immobiliare Italiano).

- Different methods are used for computing regional PPPs within BHs taking into account the main data sources.
2.1 Istat’s project for computing sub-national PPPs: using scanner data

• Though a third of EU countries have been using scanner data, only the Italian Statistical Institute (Istat) has started an official research project within the MPS framework for computing sub-national price parities

• Aims:
  • To explore the potential advantages of the use of scanner data for constructing sub-national PPPs (suitability of scanner data for making spatial comparisons)
  • To deal with the empirical issues deriving from the use of this new data source

• First phase
  • Explored to what extent the type and characteristics of the data affect the estimates by comparing various CPD models based on data characterized by different levels of aggregation
  • The various and consistent computations showed the feasibility of using scanner data to compute sub-national also at local provincial level

Second phase
• Aims:
  • To explore the feasibility of implementing various aggregation methods at BH level and assess their performance
  • To estimate regional SPIs for product aggregates
2.1 Istat’s project for computing sub-national PPPs: using scanner data-

**SCANNER DATA:**
- **YEAR:** 2017

**OUTLETS:**
- **Stratified random sample:**
  - Universe of 9,000 retailers belonging to the 16 most important retail chains (94% of modern retail chain distribution).
- **Sample stratified** by province, distribution chains and kind of outlets (888 strata)
- Outlets are selected with probabilities proportional to the 2016 turnover
- **1,781 outlets (510 hypermarkets and 1,271 supermarkets)**
- **Territorial coverage:** all cities within the 107 territorial areas (provinces and metropolitan towns)
2.1 Istat’s project for computing sub-national PPPs: using scanner data-

- **ITEMS**
  - 487,094 different products belonging to food, beverages and personal and home care products: five divisions of the ECOICOP (01, 02, 05, 09, 12), 56 Basic Headings (groups of products)
  - Scanner data cover 55.4% of the total retail trade for this category of products
  - Items were selected with probabilities proportional to the 2016 turnover for each product aggregate (at 60% cut-off line)
    - Chain structure in overlapping products

- **Price concept**
  - **annual averages** (average of prices paid by consumers) for each item and outlet using turnover as weights
  - **provincial averages** using sampling weights for each outlet

- **METHODS**: weighted regional CPD using expenditure weights at item and BH level

- **RESULTS**: Regional PPPs for FOOD and NON FOOD products sold in supermarket and hypermarkets
2.2. Istat’s project for computing sub-national PPPs: Next Steps

Next steps in the Istat’s project are:

- **Combining the results** obtained from different data sources within each BH for:
  - Traditional CPI data (product sold in traditional shops and hard discount)
  - Scanner data (products sold in supermarkets and hypermarkets)

- **Considering other sources of data:**
  - For rents (OMI)
  - For fuels (prices (Ministry of Economic Development)
  - **Several difficulties** in collecting and analysing price data for:
    - Housing, Water, Electricity, Gas and other Fuels due to the recent changes in defining fares
    - Transport (usually obtained at national level by using web-scraping techniques)
THANKS