

ICP Task Force on Country Operational Guidelines and Procedures

Sub –National PPPs

Luigi Biggeri

Progress on:

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

May, 3,2019

OECD, Paris

Paper/Manual on Sub-national PPPs

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-2-

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-3-

▪ 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