

# New Methodological Developments for the International Comparison Program

Erwin Diewert

Department of Economics, University of British Columbia, Vancouver, Canada, V6T 1Z1.

[diewert@econ.ubc.ca](mailto:diewert@econ.ubc.ca)

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## ABSTRACT

The final results for the 2005 International Comparison Program (ICP) were released in February. The program compared the level of prices and the quantities or volumes of GDP (and its components) for 146 countries for the year 2005. International price statisticians developed Structured Product Descriptions (SPDs) for approximately 1000 products and the individual countries collected price information on these products for the year 2005. The 1000 products were grouped into 155 Basic Heading (BH) categories. The price information collected in each country was then compared across countries, leading to a matrix of 155 basic heading prices by 146 countries. The precise way in which the individual product prices in each BH category were aggregated into a single country price for each BH heading is investigated in sections 2 and 3.

In contrast to previous ICP rounds, for the 2005 one, the decision was made to break up the world into 6 regions, for which price statisticians developed *separate* product lists. The 6 regions are: (1) Africa with 48 participating countries; (2) South America with 10 countries; (3) Asia Pacific with 23 countries; (4) The Commonwealth of Independent States (CIS) with 10 countries; (5) West Asia with 11 countries and (6) the OECD and other European countries covered by Eurostat plus Israel and Russia adding up to 46 countries in this region. This sums to 148 countries but Egypt appears in both the African and West Asia regions and Russia appears in both the OECD and CIS regions so there are 146 participating countries in all.

The fact that the regional product lists differ means that, without further information, prices and volumes can not be compared across regions. However, the World Bank, in cooperation with other national and international statistical agencies, developed an additional product list, which was priced out by 18 selected countries spread across the regions: the *ring countries*. The way in which this was done at the Basic Heading level is explained in section 3. Section 5 examines how comparisons at higher levels of aggregation between regions were made.

There was another methodological innovation made in this current ICP round in addition to having regional product lists: the price parities or Purchasing Power Parities (PPPs) and relative volumes for each country were determined using information on prices and GDP expenditure shares pertaining only to countries within the given region and these parities and relative volumes were preserved in the world comparison. Thus each region was independently allowed to determine its country PPPs and volume shares and the final linking of the regional results into a global world comparison left these regional relative parities undisturbed.

This paper presents some of the details of the methods that were used to:

- Construct Basic Heading PPPs for the countries within a region (section 2);
- Link the Basic Heading PPPs across the regions (section 3);
- Construct aggregate price and volume comparisons across countries within a region (section 4), and
- Link the price levels and volumes for each country within a region across the regions in a way that preserves the regional relative price and volume measures (section 5).

Sections 2 and 3 deal with problems associated with the aggregation of price information at the lowest level where information on expenditures or quantities is not available. Sections 4 and 5 focus on aggregation problems at higher levels where expenditure information is available. The material covered in sections 2-5 provides an introduction to the *ICP 2003-2006 Handbook*.

Section 6 lists some of the methodological problems that require additional research before the next round of the ICP program, scheduled in 2011. Section 7 concludes. An Appendix develops some of the axiomatic properties of the Dikhanov (1997) Iklé (1972) method for making international comparisons. This additive method was used to make comparisons between the countries in the African region, but its properties have not been fully explored. We discuss the three methods of linking prices across countries within a region at the Basic Heading level that were actually used by the regions in the 2005 ICP. The three methods used are:

- The Country Product Dummy (CPD) method (used by the African, Asian Pacific and West Asian regions);
- The Extended Country Product Dummy (CPRD) method (used by South America) and
- The EKS\* method used by the OECD/Eurostat region.

The paper concludes with a list of problem areas for making international comparisons that require additional research and discussion before the next round of the ICP takes place:

- The problem that if a country experiences hyperinflation during the reference year, the average price concept may not be meaningful.
- The problem of pricing exports and imports.
- The problem of zero expenditure categories.
- The problem of negative expenditure categories.
- Inaccurate expenditure weights that can cause grave difficulties.
- Methodological difficulties due to hard to measure areas of the accounts.
- The basic problem of the lack of matching of products that makes international comparisons of prices and volumes very difficult.
- The problem of possible anomalies due to the fact that the ring list of commodities priced is almost entirely different from the regional lists.
- The need to undertake studies on alternative methods of aggregation at the higher levels.
- Looking ahead, the need to integrate the ICP with the EU KLEMS project-- a project that is assembling data on the producer side of the economy as opposed to the final demand side which is the focus of the ICP. Producer data are required in order to calculate relative productivity levels across economies, a topic of great interest to policy makers.

Our overall conclusion is that the 2005 ICP round was a big success! The regions liked the idea that they could define their own lists of products for international pricing and this improved the quality of the data. The new methodology to link prices across the regions using ring countries also seems to be a clear improvement. The use of hand held computers and the structured product description methodology led to production improvements too for the price statistics.

One issue that has not been entirely satisfactorily resolved is the issue of disclosure of the data; i.e., a great deal of effort has gone in to collecting PPPs for 155 categories for 146 countries but only data on 15 highly aggregated PPPs will be released. Why the reluctance of the officials involved to release more of the data? One would think that more than 15 categories could be released. This most recent round has yielded a challenging list of issues for researchers to wrestle with in getting ready for the next round. The data from this round are one vital input for these research efforts. What the founders of the ICP began has come a long ways, and seems certain to keep on delivering improvements in international price comparisons in the years ahead.