

## **Impact of Different Methods and Weights for Importance Indicators on the ICP 2011 Results**

**Global Office**



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# Impact of Different Methods and Weights for Importance Indicators on the ICP 2011 Results

## 1. Introduction

At its 7<sup>th</sup> meeting, the ICP Executive Board discussed the TAG recommendation to apply the weights of 3:1 to important/less-important prices in the estimation of within-region basic heading PPPs as well as the between-region PPPs used to link the regions.

The Board reiterated that all countries should be encouraged to provide this information, and that necessary specific missions may be conducted to reluctant countries to explain to them the “importance” process and its objective relevance in the PPP computation procedure. Once available, the “importance” data will be used to test different weighting ratio options while ensuring that the weighting system is transparent and free of any subjectivity.

A technical note on the criticality of “importance” indicators and the findings of the sensitivity testing of several weighting ratios is being prepared by the Global Office, in consultation with the TAG, and submitted to the Board to allow for an informed decision on the best way of applying them.

The Global Office initially planned to conduct the sensitivity testing using the most updated importance indicators together with the 2011 revised national annual averages, which Regional Coordinators agreed to submit by the end of December 2012. However, the data had not been submitted by most of the regions by the deadline. Also, as of mid-February 2013, three regions provided preliminary submissions, for which they requested the Global Office not to conduct any calculations. Therefore the Global Office had no choice but to proceed with the sensitivity testing using submissions from September 2012. Given the quality of input data used in the sensitivity test, the Global Office will not submit the relevant report at the February 2013 Board meeting. An updated report based on improved data will be presented to the Board at their meeting in the fall.

To allow the Board to better pronounce itself on the TAG's recommendation for 3:1 weight for the CPD-Weighted method, it is crucial for regions to submit their final set of importance indicators together with revised national annual average prices so that the Global Office can conduct the analyses with the final and updated data to see the impact of choice of method and weights.

The ICP Global Office's operation material on Importance Indicators is included as an Annex.

## 2. Analyses conducted

In order to verify the differences in methods and confirm the relevant weight for the CPD-Weighted method, the following analyses were conducted.

- (1) Comparison of the number of priced GCL items and important items between regions. Also between countries in the Asia region.
- (2) Evaluation of general variability of price level indices at the product level by calculating BH-CV of PPP-ratio. This is to check the hypotheses that more important products are sold in higher volumes and therefore their price level is generally lower. The relevancy can be checked roughly by the CPRD coefficients and BH variation of PPP-ratio using CV.
- (3) Results of BH-PPP calculations by the following methods compared by the differences in the PLI: Percentage differences in Max, Min, and Max - Min.

- CPRD
- CPD 1:1 (equal weights for important / non-important products)
- CPD-W 2:1 (weight 2 for important and weight 1 for non-important products)
- CPD-W 3:1 (weights 3 : 1)
- CPD-W 4:1 (weights 4 : 1)
- CPD-W 5:1 (weights 5 : 1)
- CPD-W 10:1 (weights 10 : 1)
- EKS\* (EKS with asterisks)
- EKS (EKS without asterisks)

BH-PPPs calculated with any of the above methods were aggregated using the EKS method.

These analyses were conducted on the preliminary Household Consumption average prices and importance indicators submitted by regions in September-October 2012, to test various aggregation methods and weights for the Weighted CPD method.

Given the poor quality of the input data for most of the Regions, the experiments were done mainly with the "Average Regional prices" and "Average Regional Importance" (a product in a region was considered as important if at least 50% of the countries in that region flagged it as such).

Average Regional prices were converted to USD using exchange rates because regional PPPs are still weak. This approach allowed the estimations of between-regional linking factors in the form of inter-regional PLI. However, some experiments with individual country's price data were done too.

### 3. Findings

- 1) Allocation criteria still differs: Present allocation of Importance indications has no uniformity. The different Regions and different countries within the Regions still follow different approaches. Therefore further validation of Importance indicators is needed.

**Table 1:** Regional average of priced and important items per country and regional shares

	Priced Items Regional Average	Important Items Regional Average	Percentage of Important items
AFRICA	585	337	57.6
ASIA	419	255	60.9
CIS	448	331	73.9
OECD-EU	387	331	85.5
LAC	490	142	29.0
WA	617	116	18.8
Average	491	252	48.0

Also, it is worth mentioning that several countries in certain regions, such as Burundi, Djibouti, India, Ethiopia and Tunisia, have not provided any information for importance indicators in the September submission.

- 2) Weighted CPD looks reasonable: The calculations on the GCL HHC data for all the regions showed that there is no a clear picture between PLI for important products and less-important products.

In these circumstances the replacement of the CPRD with the weighted CPD looks like a reasonable step.

- 3) 3:1 is practicable as weight for BH PPPs: The calculations for the HHC Asian list and the World HHC GCL confirmed the practicability of the weighting system for the CPD-W = 3:1. The significant differences at the BH level exist mainly between CPD-W 3:1 and CPD-W 1:1; the differences for other versions are smaller.

**Table 2:** Differences between different weighted CPD, CPRD, EKS results compared by the differences in the PLI: Percentage differences in Max, Min and Max – Min

	MAX-BH	MIN-BH	MAX-MIN
CPD-W 3:1 vs. CPRD	32.9959296	-19.54489346	52.49536992
CPD vs. EKS	23.90826787	-16.26935989	36.71864474
CPD-W 2:1 vs. CPD-W 1:1	12.37667841	-13.90889933	21.44109571
CPD-W 3:1 vs. CPD-W 1:1	19.84049894	-19.54489346	32.9959296
CPD-W 5:1 vs. CPD-W 3:1	8.297133213	-11.73243526	18.06302511
CPD-W 5:1 vs. CPD-W 4:1	3.653640891	-5.439420273	8.159044268
CPD-W 10:1 vs. CPD-W 5:1	11.98433568	-16.23043638	24.58863165

- 4) The effects of the difference in methods is moderate for aggregated levels: The experiments showed that the aggregated level results depend on the choice of the weights for CPD-W in a very moderate degree.

**Table 3:** Linking Factors by different methods  
Inter-Regional PLI (World\_6 Reg = 100) for HHC-Total (93 BHs)

	AFR	ASI	CIS	EU-O	LAC	WAS
CPRD	111.9	74.7	90.4	156.4	82.6	102.5
CPD-W 1:1	113.0	73.2	91.6	158.8	82.3	101.0
CPD-W 2:1	112.8	73.4	89.7	158.6	83.4	101.8
CPD-W 3:1	112.6	73.4	88.7	158.5	84.0	102.4
CPD-W 4:1	112.5	73.4	88.1	158.6	84.4	102.8
CPD-W 5:1	112.4	73.3	87.6	158.7	84.6	103.1
CPD-W 10:1	112.3	73.1	86.3	159.0	85.3	104.1
EKS *	112.8	72.7	86.9	157.5	85.6	104.1
EKS w/o *	113.1	73.1	91.2	159.4	82.7	100.5

#### 4. Conclusions

The results of the analyses show that CPD-Weighted method would be a better solution when compared to other methods such as CPRD and CPD, especially for Global Comparison purposes. These results are in line with the TAG's discussions and recommendations. Also, the sensitivity testing verifies that the weight of 3:1 is plausible and practical and thus these results will be reported to the ICP Executive Board after the results are confirmed with the final data set provided soon by all the regional coordinators.

It is worth reiterating that the submission of importance indicators is crucial, also, these indicators must be carefully reviewed through thorough intra and inter-country validation processes.

## **Annex: Important Products**

### **1. Representative and important products**

In ICP 2005 countries were asked to classify all goods and services priced for Household Final Consumption Expenditure (HFCE) into two groups – “representative” and “non-representative”. This was done in order to improve the accuracy of the PPPs. Prices of products that were identified as representative by a country were to be given more weight in calculating that country’s PPP.

A “representative” product was defined as one whose price was deemed to be representative of the price level of the products in a Basic Heading. The countries participating in the OECD-Eurostat and CIS groups have been identifying representative products for the last several years, but countries in other regions had difficulties in making the distinction. All countries tried to do so but it was apparent that they were using different criteria. As a result “representativity” was not taken into account in calculating PPPs in other regions for ICP 2005.

For ICP 2011 countries in regions other than OECD-Eurostat and CIS regions will be asked to classify all goods and services in HFCE that are AVAILABLE as either IMPORTANT or LESS IMPORTANT. If a good/service is NOT AVAILABLE in the country, the notion of IMPORTANT / LESS IMPORTANT is not applicable to that good/service. Importance is defined by reference to the expenditure share of the item within a Basic Heading. Products that are identified as important by a country will then be given more weight in calculating its PPPs.

### **2. How to determine if a product is IMPORTANT or LESS IMPORTANT**

Defining importance by reference to expenditure shares raises an obvious problem in that countries are never asked to provide expenditure weights below the Basic Heading (BH) level. The BHs are in fact defined as the most detailed level of expenditures for which countries can reasonably be asked to supply expenditure shares. Countries cannot therefore be expected to classify goods and services according to their known expenditure shares. What they are asked to do instead is to say whether, if expenditure shares were available at the product level, the expenditure shares for each product would be large or small within the BH. If it is thought that the expenditure share, if known, would probably be large, the item is classified as IMPORTANT; if small it is classified as LESS IMPORTANT.

**There are three basic rules for deciding if a product is IMPORTANT or LESS IMPORTANT:**

#### Rule 1. Is it in the CPI?

If an item is the same as, or very similar to, one that is included in a country’s consumer or retail price index, the country should always classify it as IMPORTANT. (Note however, that products that are in the ICP lists but are not in the CPI may still be IMPORTANT.)

#### Rule 2. Use expert judgement/common knowledge.

The statistician can call upon his or her own knowledge of what are widely available and commonly bought brands of cigarettes, soap powder, biscuits, toothpaste etc.

#### Rule 3. Ask experts

Most often the experts will be shop-keepers. The success of their business depends on knowing which products are best sellers and which are bought less often.

### **3. Importance is determined within a Basic Heading**

An important product is one that has a large expenditure share within the Basic Heading to which it belongs. An important product may have a very small expenditure share within HFCE as a whole but still be important within its Basic Heading.

For example, in many countries few people buy wine but this does not mean that all the products specified under the *Wine* BH are LESS IMPORTANT. Within the *Wine* BH there may be one or two types of wine that are best-sellers and the wine merchant can almost certainly identify them. These particular wines are IMPORTANT within the BH even though their expenditure share may be very small in total HFCE.

#### **4. Some Basic Headings are rather heterogeneous**

Several BHs are rather heterogeneous; they contain a range of products that serve different purposes. Heterogeneous BHs should be split into homogeneous sub-groups before deciding on importance.

For example, the BH *Newspapers, books and stationery* is heterogeneous and should be split into newspapers, books and stationery before assigning importance to particular products. *Garments* is another heterogeneous BH as it includes clothing for men, women and children. It should be split into these three components before assigning importance.

Many of the heterogeneous BHs are combinations of the more homogeneous BHs in the OECD-Eurostat classification on which the *ICP Expenditure Classification* is based. The *ICP Expenditure Classification* shows which of these more homogeneous BHs have been combined. This is a useful guide in splitting up heterogeneous BHs before allocating products to the IMPORTANT and LESS IMPORTANT categories.

#### **5. How countries should proceed**

**The importance of products needs to be taken into account both while the product lists are being drawn up and when they have been finalised.**

When the core list and the regional product lists are being drawn up, the statisticians involved must determine, by means of a pre-survey, what are important products for each BH. They must ensure that these products are included in the core list and in the regional list.

When the core list and the regional list have been finalised, the country statisticians should then consider all the products under each BH. The lists will already include products that were identified as IMPORTANT in their countries but now they will also include products identified as important by other countries in the region. Each of these should be evaluated using the three basic rules above and be classified as either IMPORTANT or LESS IMPORTANT.

#### **6. LESS IMPORTANT does not mean that the product can be ignored**

Countries will provide prices for all products that they have identified as IMPORTANT. But they are also required to price products that they have classified as LESS IMPORTANT. This is essential in order to provide links with other countries.