



**MINUTES OF THE 1ST COMPUTATION TASK TEAM (COTT) MEETING
SEPTEMBER 25 - 26, 2019
WORLD BANK, WASHINGTON DC | WEBEX**

Welcome and meeting objectives

The first meeting of the ICP International Comparison Program (ICP) Computation Task Team (COTT) was held on September 25-26, 2019.

The main objective of the meeting was to discuss the current status of parallel computations by the COTT, and to identify and discuss any outstanding issues with the calculation process. The meeting agenda is provided in Annex 1. The meeting participants are listed in Annex 2.

Overview of linking, exceptions and status of regional submissions

Five ICP regions are included in the global linking: Africa (AFR), Asia and the Pacific (ASI); Eurostat (EUO), Latin America (LAT), and Western Asia (WAS).

The “standard” linking approach at the basic heading level entails the following steps:

- **STEP A1:** ICP regions and Eurostat-OECD calculate regional basic heading (BH) PPPs using the CPD-W (HHC), CPD (non-HHC, Asia) or EKS*/EKS (Eurostat-OECD) methods, and utilizing referencing
- **STEP A2:** Global Core List (GCL) item prices in national currency are converted into a common regional numéraire using the country's regional BH PPPs from step A1¹
- **STEP A3:** Interregional Linking Factors (LFs) for each BH are estimated using the CPD-W (HHC) or unweighted CPD (Non-HHC) methods based on converted GCL prices from step 2
- **STEP A4:** Countries’ regional BH PPP from step A1 are multiplied by the interregional LFs resulting from step A3 to arrive at linked global PPPs in world numéraire, with fixity²

Furthermore, the “standard” linking approach above the basic heading level entails the following steps:

- **STEP B1:** ICP regions and Eurostat-OECD aggregate regional BH PPPs using the GEKS method
- **STEP B2:** Countries’ volume shares in regional comparisons are obtained for each level of aggregation from step B1
- **STEP B3:** BH PPPs in world numéraire from step A4 are aggregated using the GEKS method³
- **STEP B4:** Regional volume totals in global comparison are obtained by summing up the volumes for individual countries in each region from step 3⁴

¹ LAT PPPs should be utilized for LAC; these PPPs will be provided at a later stage to the COTT.

² Global BH PPPs for the dual-participation countries are geometric means of “regional” AFR and WAS PPPs.

³ Dual-participation countries included only once to AFR region.

⁴ Volumes of Dual-participation countries are included in both regions AFR and WAS.

- **STEP B5:** Regional volume totals for each region from step B4 are divided using the countries' shares in regional comparison from step B2⁵
- **STEP B6:** PPPs in world numéraire for each country are derived indirectly by dividing countries' nominal expenditures by the volumes derived from step B5 for each level of aggregation up to GDP

Exceptions to the “standard” linking approach cover the following headings:

- Housing (household consumption and government, as reference from household consumption)
- Health and Education (household consumption and government)
- Government Compensation, with the application of productivity adjustment
- Construction and Civil Engineering

Regional and country exceptions cover the following:

- CIS Region: Linked through the OECD-Russia at the BH level and through Eurostat-OECD at the aggregated levels (PPPs US=1)
- Caribbean region (CAR): Linked through the Latin America (LAT) region
- Special participation countries: GEO and UKR: Linked through the Eurostat region (PPPs DEU=1); IRN: Linked through the Western Asia (WAS) region
- Dual-participation countries: EGY, SUD, MAR (2017): Africa (AFR) and Western Asia (WAS) and RUS: Eurostat-OECD and CIS

All regions are still validating their datasets; the ICP Global Office will keep the COTT informed on the progress with completing and revising the respective datasets.

Linking Housing

Housing is linked differently from the “standard” headings, as different regional approaches are being followed.

The COTT will be provided with three different ICP 2017 housing linking factors based on the following three scenarios:

1. Using the 2011 methodology: Linking AFR, LAT, WAS using rents; and ASI and EUO via volume.
2. Using the 2011 methodology, but with a different treatment for Asia: Linking AFR, LAT, WAS, and ASI using rents, and EUO via volume.
3. Using Alan Heston’s alternative methodology to link all regions (including EUO) using rents, while adjusting for differences in rural % shares across regions. This method will also be used to reproduce 2011 housing results. For both 2017 and 2011, it relies on mapping Eurostat-OECD rental items to ICP rental items in order to generate direct price levels with EUO=100.

When computing the above scenarios, the linking factors for the “actual rentals” basic heading will also be used for the “imputed rentals” basic heading. A proposal to use different methods to estimate different linking factors for “actual rentals” and “imputed rentals” basic heading will be raised at the Technical Advisory Group (TAG) meeting in October. To this end, simulations will be carried out in the future to explore this topic in more detail.

⁵ Volumes for the dual-participation countries are geometric averages of “regional” AFR and WAS volumes.

Lastly, the ICP Global Office will modify the COTT input file to omit “annual rent per dwelling” items, leaving only the “annual rent per m2” items.

Going forward, examining a possibility of harmonizing rental item lists across regions was suggested.

Linking Health and Education

Health and Education are linked differently from the “standard” headings, as different regional approaches are being followed, namely, Eurostat-OECD follows an output approach, whereas the ICP regions follow an input approach. This impacts both the related household consumption (HHC) and government (GOV) headings.

ICP 2011 linking approach entailed linking Education through 5 Latin American countries, and Health through a combination of price and salary data (using the standard approach). Furthermore, for Education, the same set of linking factors were utilized for all Education BHs (1 HHC + 6 GOV).

For ICP 2017, it is suggested to link Health and Education through prices and salaries, i.e. based on a combination of price and input cost approaches as follows:

- **STEP 1:** Eurostat-OECD will provide necessary PPP and expenditure breakdowns for HHC and GOV health and education, per the approach explained in the note drafted by Eurostat-OECD.
- **STEP 2:** Linking factors are calculated utilizing these datasets per the “standard” approach, except for HHC education, for which linking factors are calculated without Eurostat-OECD. Linking factors for HHC education are subsequently referenced based on the GOV education. This is done by taking geometric means of HHC education linking factors (without EUO) and GOV education linking factors (with EUO), at the level of total GOV education (6 basic headings) with productivity adjustment, for the 4 regions (AFR, ASI, LAT, WAS), and by scaling the HHC education linking factors so that the geomeans are equal for both HHC and GOV education for the 4 regions.
- **STEP 3:** HHC and GOV health and education basic headings are linked utilizing the regional PPPs from step 1, and linking factors from step 2, and the global, linked, basic headings are aggregated using the standard GEKS-method.
- **STEP 4:** Application of the CAR-method maintains fixity of Eurostat-OECD’s output-based PPPs, which refer to actual (total) Health and Education.

The extended datasets for Eurostat-OECD will be included to the next version of the COTT input file.

Eurostat-OECD stressed that the PPPs and expenditures provided to build the linking factors should not be available to the researchers, due to nature as intermediate calculation instrument.

Eurostat-OECD will also circulate further refined note on the approach for TAG’s consideration.

Productivity Adjustment Factors (PAFs) and Application

Government compensation headings are linked differently from the “standard” headings, as AFR, ASI and LAC (LAT+CAR) regions are utilizing adjustments for productivity, whereas CIS, EUO and WAS regions are not. Adjustment for productivity should not be double applied. In addition, the linking approach of 2011 will be replicated for 2017⁶.

⁶ The procedure is outlined numerically in the accompanying Excel file.

For ICP 2017, the following linking approach is to be used:

- **STEP 1:** Linking factors for the three compensation headings are calculated using wages of public workers and regional BH PPPs without productivity adjustment (will be provided in the COTT input file for all regions), in line with the common methodology for regular BHs.
- **STEP 2:** Within each region, Geometric means of global PAFs and regional PAFs are computed. The regional PAFs are used as applied by the regions; for example, Eurostat-OECD has PAFs as unity in their regional computation.
- **STEP 3:** Regional PAF adjustments are estimated as a ratio of the geometric mean of the global PAF over the geometric mean of the regional PAF, both from STEP 2, and the ratios are subsequently normalized relative to Eurostat-OECD.
- **STEP 4:** Regional PPPs with regional PAFs are multiplied by PAFs from STEP 1 and by PAF adjustments from STEP 3 to arrive at the global set of compensation BHs with PAFs.

The sets of regional and global PAFs will be re-estimated without “natural resource rents” and utilizing regional and global PPPs for GFCF, respectively. In addition, underlying datasets will be provided to the Global Office and COTT.

Lastly, it was agreed to omit the following compensation items from the “health” and “education” BHs: “Senior government officials” and “Office cleaner” to ensure balanced inclusion of relevant occupations for each BHs. The ICP Global Office will modify the COTT file accordingly, and recommend regions to follow the same approach in their final regional calculations.

Construction and Civil Engineering

Construction and Civil Engineering is linked differently from the “standard” headings, as different regional approaches are being followed, namely, Eurostat-OECD follows a “bills of quantity” approach, whereas the ICP regions follow a simplified input cost approach.

Eurostat-OECD has provided price data per the ICP approach for the following selection of 10-11 countries for linking purposes:

- BEL; BGR; DEU; FIN; GBR; NLD; NOR; PRT (data usability for linking to be confirmed); SVN; USA; RUS (data availability for linking to be confirmed)

The ICP 2011 linking approach entailed the following steps:

- **STEP 1:** Machinery and Equipment item prices were used as reference for the equipment hire sub-heading at the global level, due to concerns with construction survey data quality and comparability.
- **STEP 2:** Regional GCL prices in local currency were used to calculate sub-heading PPPs using the CPD method (3 X 3); these PPPs were subsequently aggregated using the GEKS method (9 sub-headings → 3 BHs).
- **STEP 3:** Linking factors for the Construction BHs (3) were calculated as the geometric mean of aggregated subheading PPPs for the countries in a region.

A sample linking factor calculation template from ICP 2011, covering the above steps, was circulated to the COTT.

For the ICP 2017, the same approach is suggested to be followed; however, all construction and civil engineering survey data is to be utilized, including those for equipment hire items, which were referenced in the ICP 2011.

Lastly, the Global Office will modify the COTT input file to reflect [basic heading specific allocation](#) of “material” items; allocation of “equipment hire” and “labor” items remain the same.

Reference PPPs

The ICP Global Office has revised the reference PPP mapping to be used for linking per the feedback received from the COTT. The mapping will be further refined based on COTT feedback and sent to the COTT with the next data submission.

Computation of ICP 2017 Results and Revised 2011 Results

Calculation of results for the so-called “non-hierarchical” headings, most notably “goods” and “services”, will be further discussed at the TAG meeting. For now, the COTT file aggregation mapping table will be updated, where possible, including household consumption with NPISH, and household consumption with NPISH and without housing.

Way Forward

The COTT agreed on the following timeline and next steps:

- **September 30, 2019:** Circulation of draft meeting conclusions [GO]
- **September 30, 2019:** Submission of revised regional data [RIAs]
- **October 4, 2019:** Circulation of final Phase II data, reflecting updates from regions and agreements by COTT [GO]
- **October 7, 2019:** Provision of preliminary PAF timeseries + underlying data [RI]
- **By October 11:** Provision of preliminary linking factors for housing [AH, PK and GO]⁷
- **By October 18:** Provision of preliminary results for 2017 and 2011 and timeseries [COTT]
- **October 21, 2019:** Provision of preliminary 2017 results, 2011 revised results and timeseries to TAG [GO]
- **October 23-25, 2019:** 8th IACG meeting (Q/A of 2017 data, revised 2011 data, time series and auxiliary data)
- **October 28-29, 2019:** 4th TAG meeting (Q/A of preliminary 2017 results, revised 2011 results, and time series)
- **December 13, 2019:** 5th ICP Governing Board meeting

In preparation for the forthcoming 4th TAG meeting, the Global Office will circulate proposed templates for the methodological presentations, as well as the results presentations, for all presenters to follow.

⁷ Specifically calculated linking factors for health and education are no longer needed, due to the approach proposed by Eurostat-OECD.



1st Meeting of the International Comparison Program (ICP)

Computation Task Team (COTT)

September 25–26, 2019 (Virtual meeting through WebEx)

Agenda

Day 1, Wednesday, September 25, 2019 [Room: MC 3-500]

09:00 – 09:45 Overview of linking and exceptions

09:45 – 11:00 Linking housing

11:00 – 12:00 Linking health and education

Day 2, Thursday, September 26, 2019 [Room: MC 2-850]

09:00 – 09:30 Productivity adjustment factors and application

09:30 – 10:00 Construction and civil engineering

10:00 – 10:30 Reference PPPs

10:30 – 11:00 Computation of ICP 2011 and 2017 results

11:00 – 12:00 Way forward

Annex 2: Participants

Participant	Organization
Aten, Bettina	Bureau of Economic Analysis
Costa, Rui	ICP Global Office
Dikhanov, Yuri	ICP Global Office
Figueroa, Eric	Bureau of Economic Analysis
Hamadeh, Nada	ICP Global Office
Heston, Alan	University of Pennsylvania
Hill, Robert	University of Graz
Inklaar, Robert	University of Groningen
Koechlin, Francette	Organisation for Economic Co-operation and Development (OECD)
Konijn, Paulus	Statistical Office of the European Union (Eurostat)
Nsabimana, Maurice	ICP Global Office
Rissanen, Marko	ICP Global Office
Sergeev, Sergey	Statistics Austria
Song, Inyoung	ICP Global Office
Steurer, Miriam	University of Graz
Vigil Oliver, William	ICP Global Office
Yamanaka, Mizuki	ICP Global Office