



[04.04]

Extrapolating ICP Data and PPPs



7TH Technical Advisory Group Meeting
September 17-18, 2012
Washington, DC

Outline

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Background and Objectives

Objectives

Objectives

**Meeting
user
demand for
PPP time
series**

**Improve on
existing
methods**

**Provide
more
detailed
time series**

**Maximize
data
utilization
from 2011
Round and
interim
exercises**

Build on the investments made in the 2011 Round

Criteria

**Technical
soundness**

Robustness

Feasibility

**Cost-
effectiveness**

Current methods

THE WORLD DEVELOPMENT INDICATORS METHOD

- ✓ Macro approach
- ✓ Extrapolation from benchmark year using implicit price deflators (IPDs) for GDP for each country involved
- ✓ Low-cost and easy to implement
- ✓ Bilateral extrapolation method

The EUROSTAT ROLLING BENCHMARK METHOD

- ✓ Rolling Benchmark (annual surveys)
- ✓ PPPs extrapolated at the basic heading level
- ✓ CPI indices generally used as extrapolation factors for the PPPs
- ✓ PPPs aggregated in a multilateral way
- ✓ Annual cost to collect required price data

The PENN WORLD TABLE METHOD

- ✓ PPPs estimated for actual consumption, collective government consumption, and gross fixed capital formation
- ✓ PPPs aggregated to Domestic Absorption
- ✓ PWT 8.0 to use a new methodology



Overview of proposed approach

Overview of Approach

1st Stage

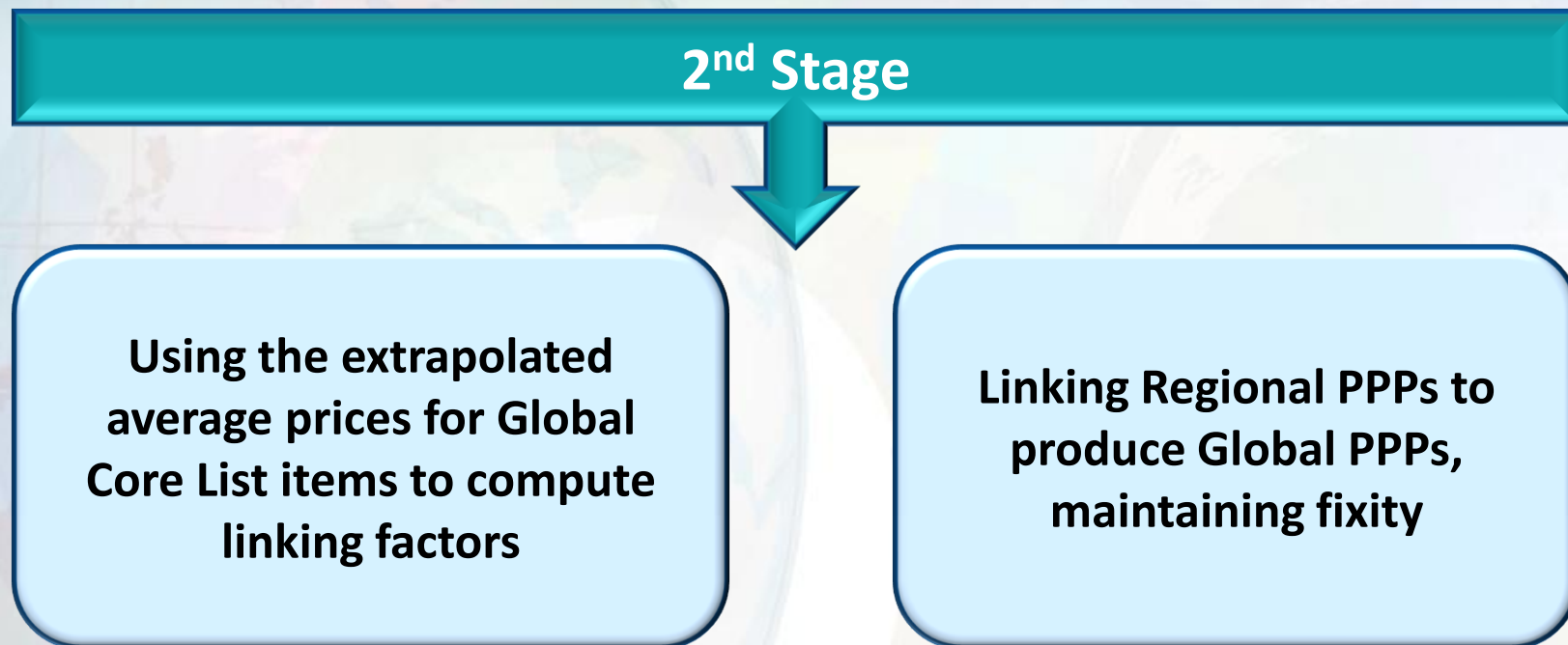
Extrapolating ICP benchmark average price data using national price indices to non-benchmark years

Computing Basic Heading Regional PPPs from the extrapolated price data

Extrapolating Basic Heading expenditure data using changes in prices and population and new survey data

Aggregating Basic Heading Regional PPPs to compute Regional PPPs for GDP and its main aggregates

Overview of Approach





Extrapolating price data

Extrapolating Data Under GDP Aggregates

Household Consumption

- Use Consumer Price Indices and Sub-Indices (most detailed level available from countries)

Compensation of Government Employees

- Use implicit deflators for Government
- Obtain compensation data from countries, if possible

Gross Fixed Capital Formation

- Use Construction Price Index or Producer Price Index , if available
- Use implicit deflators for Gross Capital Formation

Using the CPI

CPIs currently used in the ICP in the computation of annual averages to:

Impute quarterly average prices, when missing

Backcast from collection year (2012) to benchmark year (2011)

Why not use CPIs to forecast 2011 prices?

$$P_{i,n} = P_{i,b} * (CPI_{j,n} / CPI_{j,b})$$

where i is the product, n is the time period, b is the ICP benchmark period, and j is the group of products for which a CPI sub-index is available



Extrapolating National Accounts Expenditure Data

The Model Report on Expenditure Statistics

The Model Report on Expenditure Statistics (MORES) supports the countries in their efforts to provide a detailed metadata report showing how expenditures are estimated for each BH.

Specifically, it assists countries to compile:

- ✓ **detailed expenditure values for each BH of the ICP classification;**
- ✓ **information on the splitting approach; and**
- ✓ **information on the indicators used to estimate the expenditure values**

Extrapolation Approach

**Extrapolate the MORES
on an annual basis using:**

- Changes in prices**
- Changes in population**
- Changes in production and
imports, when data is available**
- New survey data**

**Analyze the metadata reported in the MORES on how
countries compile their basic heading expenditure data**

Build on the national MORES compiled for a benchmark year

Learning from the MORES

Centrally organized extrapolation

Once the 2011 MORES is in place, estimates for subsequent years can be compiled centrally for countries that do not update their expenditures annually

BH expenditures for countries that compile them annually can be obtained from OECD-Eurostat and CIS-STAT or from the countries concerned

Categories of extrapolation indicators

Demographic indicators

Supply indicators

Health indicators

Inflation indicators

Macroeconomic indicators

Government Finance data

Extrapolation Steps (1-4)

1

Create an extrapolation matrix and insert in the matrix the estimated/forecast expenditure values of GDP and its main aggregates available in international databases.

2

Insert in the extrapolation matrix ratios extracted from a country's MORES, if available. Only ratios related to indicators whose data can be found in international databases will be included in the matrix.

3

Include in the matrix, data related to other extrapolation indicators available in international databases

4

Include in the matrix any expenditure value that may be readily available

Extrapolation Steps (5-8)

- 5** Complete the matrix with appropriate relationships/formulas, showing how the ratios and the indicator values mentioned above will combine into basic headings estimates.
- 6** For basic headings that cannot be estimated through previous steps, use their share into their relevant main aggregate for 2011, and multiply it by the estimated value of the main aggregate for the subsequent year.
- 7** Check additivity and make any necessary adjustment
- 8** For all household consumption headings calculate the variations of per capita values between the subsequent year and 2011. If these variations are significantly different from those that would have been obtained if the per capita expenditure was extrapolated using price and population changes, find supporting and economically acceptable justifications, or make further adjustments to the estimated values.



Consistency of Extrapolation Processes

Consistency of Extrapolation Processes

Extrapolation of a basic heading underlying price data

**De facto price indices for each basic heading:
“Composite Price Variation” (CPC)**

Extrapolation of a basic heading expenditure data

Implicit price change component : “Implicit Price Component” (IPC)

Compare and validate



Data Availability

Availability of Extrapolation Indicators

Price data extrapolation indicators

Consumer Price Index (General, Food, ..)
Producer Price Index
Main aggregates (Current and constant series)
Implicit price deflators (various aggregates)
...

Expenditure data extrapolation indicators

Consumer price index
Population
Household final consumption expenditure
Expenditure per student
Public spending on education
Health expenditure
Compensation of employees
Construction, value added
...

CPI sub-indices are usually not available in international databases and would need to be collected from countries on an annual basis.



Advantages and Drawbacks

Advantages

Linking Efficiency

- ✓ It is a multilateral extrapolation approach
- ✓ Maintains the same ICP process (Regional PPPs then Global PPPs)
- ✓ Maintains fixity

Data Maximization

- ✓ Extrapolation takes place at the lowest possible level
- ✓ Maximizes the utilization of ICP data collected for benchmark rounds (Ex: 2012 prices)
- ✓ Maximizes the utilization of ICP data from regional interim update exercises
- ✓ Set of core products could be used to obtain some prices between benchmarks

Result Availability

- ✓ Publishing extrapolated PPPs for various aggregates and details
- ✓ PPP data would be available even if ICP benchmark exercises are not organized on a regular basis

Price-Expenditure Consistency

- ✓ Can benefit from any improvements in National Accounts systems in countries
- ✓ Ensures the consistency of extrapolations of price and expenditure data

Drawbacks

CPI-ICP Harmonization

- ✓ Differences between PPP and CPI definitions of products and the collection of data
- ✓ Prices in a country's CPI are adjusted for quality changes over time, and countries do not use common methods to adjust for these changes
 - However, efforts to harmonize CPIs across countries will contribute to improved uses of CPIs for extrapolation.

Data Requirement

- ✓ Amount of data required to extrapolate the price and expenditure data
- ✓ Regular annual activity involving obtaining from countries the extrapolation indices for the various aggregates and expenditure data and processing the results
 - However, the initial investment is high then automation can help make the process more efficient

Data Requirement under Available Methods





Thank you