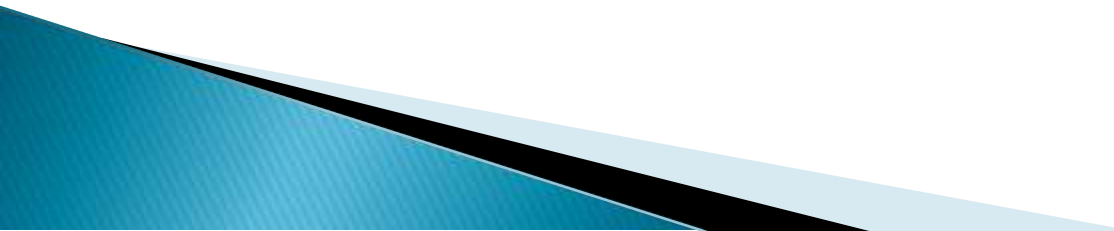


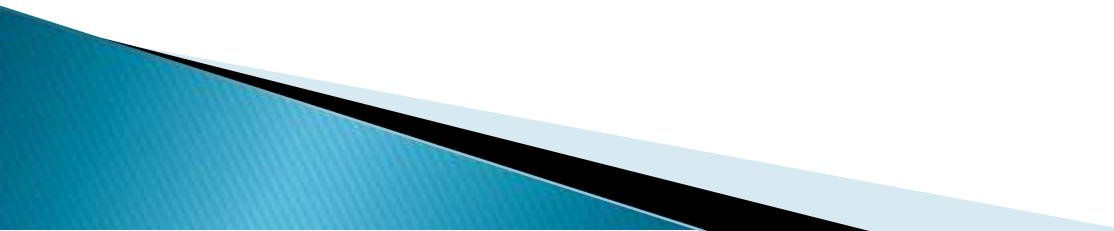
# Compilation of annual PPPs

Norma Chhab Alperin  
World Bank–ECLAC  
May 2018

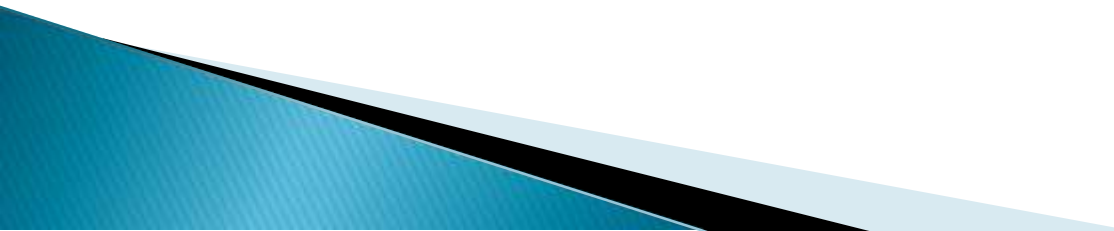
# UN Statistical Commission Recommendation (2016)

- ▶ Relevance of ICP results depend on their frequent and timely availability
  - ▶ Recommendation: a frequency of at least every two or three years with extrapolations to annual results
- 

# More Frequent Results

- ▶ Global ICP Unit has identified two major components to moves towards annual results:
    1. compilation of annual time series of PPPs
    2. rolling price surveys
- 

# Compilation of annual PPPs

- ▶ Global ICP Unit recognizes the need to fill the gap for the 2012–2016 period
  - ▶ The current timetable is to release comparisons for the years 2012 to 2016 around the same time as the release of results from 2017 ICP, i.e. December 2019
- 

# Main Tasks Involved

- ▶ Assess availability and quality of national account deflators, CPIs and other price indices by GDP component
- ▶ Examine consistency of CPI weights and national account weights, and assess the weights' effects on PPPs
- ▶ Develop approach for building PPP time series for the interim period [2012–2016] (Global Office)
- ▶ Ensure consistency between the 2011 and 2017 results and the comparisons for the intervening years

# Framework

- ▶ Chapter 15 of System of National Accounts 2008 states

*15.232 The method commonly used to extrapolate PPPs from their benchmark year to another year is to use the ratio of the national accounts deflators from each country compared with a numeraire country (generally the United States of America) to move each country's PPPs forward from the benchmark.*

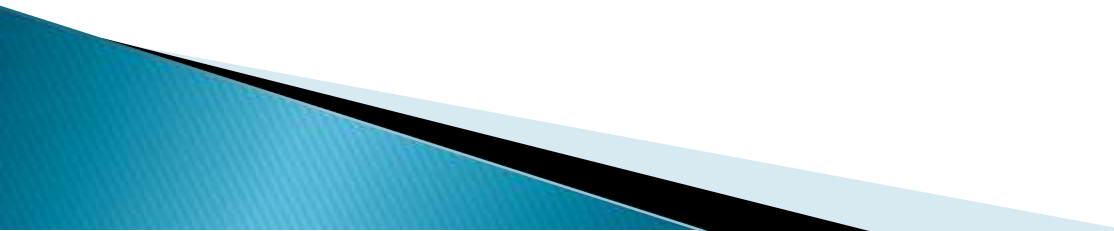
*The PPPs derived are then applied to the relevant national accounts component to obtain volumes [real expenditures] expressed in a common currency for the year in question.*

# Framework

*15.233 Theoretically, the best means of extrapolating PPPs from a benchmark year would be to use time series of prices at the individual product level from each country in the ICP to extrapolate the prices of the individual products included in the ICP benchmark.*

*In practice, it is not possible to use this type of procedure in extrapolating PPP benchmarks because the detailed price data needed are not available in all the countries. Therefore, an approach based on extrapolating at a macro level (for GDP or for a handful of components of GDP) is generally adopted.*

# Methodology

- ▶ A method commonly used to produce annual PPPs is based on the above macro approach.
  - ▶ It involves interpolating between benchmark years or extrapolating from the latest benchmark year using the implicit price deflators (IPDs) for GDP for each country involved.
- 



# Methodology

The formula underlying this approach is

$$PPP_A^{t+1} = PPP_A^t \times (IPD_A^{t+1} / IPD_R^{t+1})$$

where

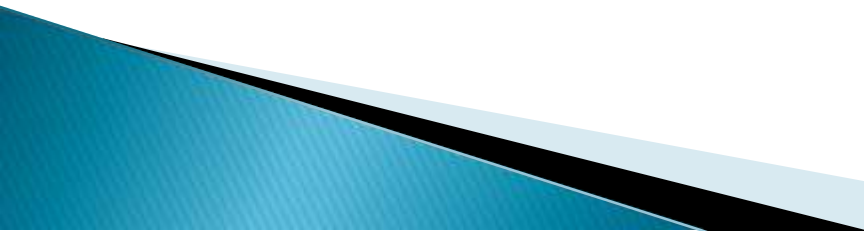
$PPP_A^{t+1}$  equals the PPP for country A in year  $t + 1$

$PPP_A^t$  equals the PPP for country A in year  $t$

$IPD_A^{t+1}$  equals the IPD for GDP in country A in year  $t + 1$   
(base=100 in year  $t$ )

$IPD_R^{t+1}$  equals the IPD for GDP in the reference country  
( $R$ ) in year  $t + 1$  (base=100 in year  $t$ )


# Level of Aggregation

- ▶ Past experience shows serious discrepancies between benchmarks and extrapolations at the aggregate level
  - ▶ The best results from an extrapolation procedure would be obtained if the PPPs for each of the 155 ICP basic headings (BH) were extrapolated individually using the relationship between the price relatives for each BH in each country and those in a reference country
- 

# Level of Aggregation

- ▶ A compromise is to extrapolate PPPs at some intermediate level between the basic heading and GDP
- ▶ In such a case, the PPPs extrapolated at this intermediate level are then weighted together to estimate a PPP for GDP
- ▶ For example, the PPPs for household final consumption expenditure, government final consumption expenditure, gross fixed capital formation, and net exports of goods and services could be estimated and then weighted together in the usual way to obtain an estimate of the PPP for GDP

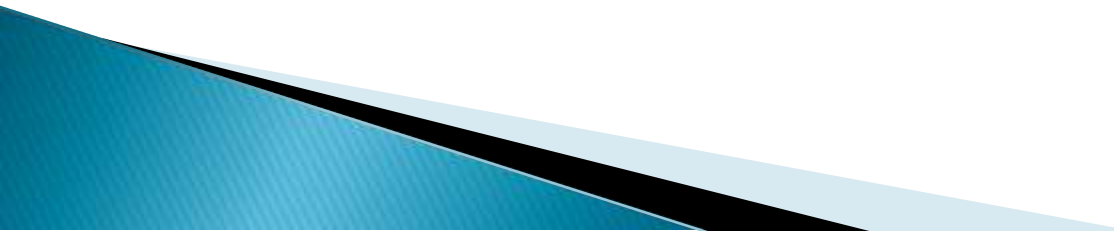
# Current Approach

- ▶ The Task Force PPP Compilation and Computation at the Global Office will develop the approach to estimate the PPP time series
  - ▶ The minimum level of disaggregation considered at this point is GDP and its main aggregates
  - ▶ The extrapolation will be done by the Regional Coordination Agency
- 

# Extrapolation Data Requirements

- ▶ CPI : Total CPI and COICOP 12 categories
- ▶ CPI : Weights for COICOP 12 categories
- ▶ GDP Deflators: GDP and Main Aggregates
- ▶ GDP Expenditures: GDP, Main Aggregates, Categories
- ▶ Population; Mid-Year Total
- ▶ Exchange rate: Annual Average

# Potential further data requirements

- ▶ More detailed datasets (e.g. BH level CPIs)
  - ▶ Addition extrapolation indices (e.g. producer or construction price indices)
- 

# ECLAC Data Requirements: CPI

- ▶ CPIs are used to extrapolate the Household Consumption PPPs
- ▶ Minimum level: CPI total and 12 COICOP categories for years 2011–2016
- ▶ When available : CPI for Basic Headings years 2011–2016
- ▶ CPI weights at the same level of disaggregation as indices

# CPI Minimum Data Required

## TOTAL CPI

110100	FOOD AND NON-ALCOHOLIC BEVERAGES
110200	ALCOHOL BEVERAGES, TOBACCO AND NARCOTICS
110300	CLOTHING AND FOOTWEAR
110400	HOUSING, WATER, ELECTRICITY, GAS, AND OTHER FUELS
110500	FURNISHING, HOUSEHOLD EQUIPMENT AND ROUTINE MAINTENANCE OF THE HOUSE
110600	HEALTH
110700	TRANSPORT
110800	COMMUNICATION
110900	RECREATION AND CULTURE
111000	EDUCATION
111100	RESTAURANTS AND HOTELS
111200	MISCELLANEOUS GOODS AND SERVICES



# Overall Situation: CPI

- ▶ Latin America

- 14 countries

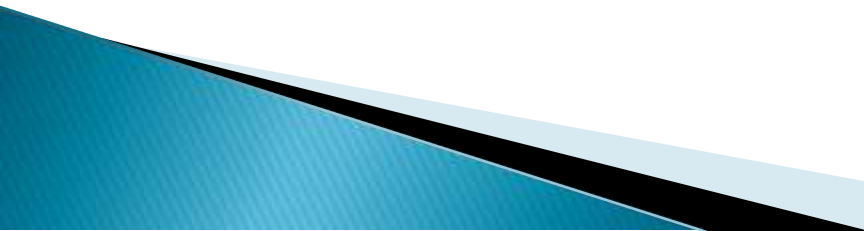
- 11 countries use COICOP classification
    - 3 countries present some COICOP categories together

- ▶ Caribbean

- 23 countries

- 17 countries use COICOP classification
    - 6 countries present some COICOP categories together

# GDP Deflators

- ▶ GDP Deflators are used to extrapolate PPPs for expenditures by government, capital formation and trade balance
  - ▶ GDP and Main aggregates 2011–2016
  - ▶ When available: Deflators for all categories 2011–2016
- 

# GDP Deflators Minimum Data Required

<b>100000</b>	<b>GROSS DOMESTIC PRODUCT</b>
<b>110000</b>	<b>INDIVIDUAL CONSUMPTION EXPENDITURE BY HOUSEHOLDS</b>
110100	FOOD AND NON-ALCOHOLIC BEVERAGES
110200	ALCOHOL BEVERAGES, TOBACCO AND NARCOTICS
110300	CLOTHING AND FOOTWEAR
110400	HOUSING, WATER, ELECTRICITY, GAS, AND OTHER FUELS
110500	FURNISHING, HOUSEHOLD EQUIPMENT AND ROUTINE MAINTENANCE OF THE HOUSE
110600	HEALTH
110700	TRANSPORT
110800	COMMUNICATION
110900	RECREATION AND CULTURE
111000	EDUCATION
111100	RESTAURANTS AND HOTELS
111200	MISCELLANEOUS GOODS AND SERVICES
111300	BALANCE OF EXPENDITURES OF RESIDENTS ABROAD AND EXPENDITURES OF NON-RESIDENTS IN THE ECONOMIC TERRITORY
<b>120000</b>	<b>INDIVIDUAL CONSUMPTION EXPENDITURE BY NPISHS</b>
<b>130000</b>	<b>INDIVIDUAL CONSUMPTION EXPENDITURE BY GOVERNMENT</b>
<b>140000</b>	<b>COLLECTIVE CONSUMPTION EXPENDITURE BY GOVERNMENT</b>
<b>150000</b>	<b>GROSS FIXED CAPITAL FORMATION</b>
150100	MACHINERY AND EQUIPMENT
150200	CONSTRUCTION
150300	OTHER PRODUCTS
<b>160000</b>	<b>CHANGES IN INVENTORIES AND ACQUISITIONS LESS DISPOSALS OF VALUABLES</b>
<b>170000</b>	<b>BALANCE OF EXPORTS AND IMPORTS</b>
1701111	Exports of goods and services
1701112	Imports of goods and services

# Overall Situation: GDP Deflators

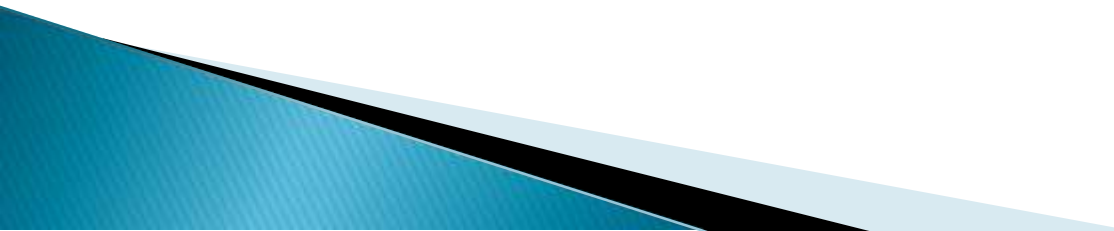
## ▶ Latin America

- 14 countries have constant prices GDP for the main aggregates
  - In most countries:
    - ICE by NPSHS included in ICE by Households
    - ICE and CCE by Government together
    - Only GFCF total

## ▶ Caribbean

- 23 countries
  - 5 countries have constant prices GDP
  - 13 countries have constant prices GDP by industry
  - In most countries

# GDP Expenditures

- ▶ GDP Expenditures are used to aggregate the PPPs
  - ▶ GDP and Main aggregates 2011–2016
  - ▶ When available: Expenditures by categories 2011–2016
- 

# GDP Expenditures Minimum Data Required

<b>100000</b>	<b>GROSS DOMESTIC PRODUCT</b>
<b>110000</b>	<b>INDIVIDUAL CONSUMPTION EXPENDITURE BY HOUSEHOLDS</b>
110100	FOOD AND NON-ALCOHOLIC BEVERAGES
110200	ALCOHOL BEVERAGES, TOBACCO AND NARCOTICS
110300	CLOTHING AND FOOTWEAR
110400	HOUSING, WATER, ELECTRICITY, GAS, AND OTHER FUELS
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150300	OTHER PRODUCTS
160000	<b>CHANGES IN INVENTORIES AND ACQUISITIONS LESS DISPOSALS OF VALUABLES</b>
170000	<b>BALANCE OF EXPORTS AND IMPORTS</b>
1701111	Exports of goods and services
1701112	Imports of goods and services

# Overall Situation: GDP Expenditures

- ▶ Latin America
  - 14 countries have Current Prices GDP for the main aggregates
    - In 10 countries the ICE by NPSHS included in ICE by Households
    - ICE and CCE by Government together
    - 2 countries disaggregate the GFCF to M&E and Construction
- ▶ Caribbean
  - 23 countries
    - 17 countries have Current Prices GDP for the main aggregates
    - 4 countries do NOT have Expenditure Based GDP
    - In some countries the ICE by NPSHS included in ICE by Households
    - In some countries ICE and CCE by Government together
    - 7 countries disaggregate the GFCF to M&E and Construction

# Population Data


- ▶ Population data is used to calculate the per capita estimates
- ▶ Mid year population for years 2011–2016



# Exchange Rates

- ▶ Exchange rates are used to calculate the price level indexes
- ▶ Annual average for years 2011–2016

# Process

- ▶ ECLAC will create, maintain and update a database with all the data needed
  - ▶ Countries should provide:
    - CPI indexes and weights at the most detailed level possible from 2011 on
    - Annual GDP Expenditures from 2011 on
    - Annual GDP Deflators from 2011 on
    - Annual Population from 2011 on
    - Average Annual Exchange Rate 2011 on
- 

# Process


[Template Individual Country Reporting File.xlsx](#)

The deadline for send the information available is

June 8, 2019

The files should be sent to  
[PCI2017@cepal.org](mailto:PCI2017@cepal.org)

# Remarks

- ▶ The estimation of annual PPPs is a procedure that will be done only ONCE
  - ▶ Starting in 2020, ECLAC in synch with all the other Regions will implement a Rolling Price Survey Approach
  - ▶ This approach will produce annual PPPs
  - ▶ There is an opportunity to develop sustainable procedures/mechanisms that can be used to estimate these indicators for the next few years
- 

**THANKS / GRACIAS**

