

3.3 Subnational PPP: Approaches and Methods

3.3 What level of aggregation?

OPTIONS:

For ICP

- ▶ Basic Heading (ICP Code: 7-Digit) - 96
- ▶ Class (6-Digit) - 78
- ▶ Group (5-Digit) - 38
- ▶ Category (4-Digit) - 12
- ▶ Major Aggregates (2-Digit) - Household

For CPI

- ▶ Totally dependent on countries

3.3 What can be considered? (ICP: Group (4-digit) Subnational PPP)

Code	Name
1101	Food And Non-Alcoholic Beverages
1102	Alcoholic Beverages, Tobacco And Narcotics
1103	Clothing And Footwear
1104	Housing, Water, Electricity, Gas And Other Fuels
1105	Furnishings, Household Equipment And Routine Maintenance Of The House
1106	Health
1107	Transport
1108	Communication
1109	Recreation And Culture
1110	Education
1111	Restaurants And Hotels
1112	Miscellaneous Goods And Services

3.3 Estimating Subnational PPP: Using ICP Data

- Step 1 – Review the location coding
- Step 2 – Identify aggregation level for which sufficient overlaps can be established across states/provinces/regions
- Step 3 – Data editing and validation
- Step 4 – PPP Calculation (unweighted CPD)
- Step 5 – PPP calculation at higher aggregates (EKS)

3.3 Using ICP Data: Constraints and Limitations

- ▶ ICP Data by state/province is only available for household for most economies
- ▶ Only average prices by item and by state/province are available
- ▶ No corresponding weights were available at the state
- ▶ Subnational PPP estimates are based on actual data and require further intra-country data validation
- ▶ PPP estimates at all levels are currently unweighted
- ▶ Not as reflective as how it will be if expenditure values/structures/weights within the region/state/province will

3.3 Using ICP Data: Some Proposals

- ▶ **For Subnational PPPs using ICP Data**
 - ▶ Provision of household expenditures at the targeted level of aggregation by region/state/province
 - ▶ Can be drawn from the CPI expenditure weights
 - ▶ Use the same CPI weights by region/state/province to come up with weighted PPP for each region/state/province

3.3 Using CPI Data: Major Considerations

- Organization of data for computing subnational PPP
- Determination of the overlapping products
- Subnational Aggregation

3. Using CPI Data: Major Considerations

- Expenditure Weights from Household Expenditure Survey (which is the same as the ones used for calculating CPI at the aggregated level)
- Average Prices for each variety by Region from CPI
- Average Prices for each item by region from ICP

3.3 Using CPI Data: Major Considerations

- ▶ Established Coding System (Country or International)
- ▶ Prices for exactly the same products
- ▶ Geographic Coverage: Depends on Study (could be provincial, regional, city, etc.)
- ▶ Expenditure weights based on target aggregation level and should coincide with target groupings or geographic coverage

3. Subnational PPP estimation: Countries Considered

- ▶ Using ICP Data: All
- ▶ Using CPI Data:
 - Mekong Region
Thailand; Viet Nam
 - Southeast Asia
PRC; Malaysia; Philippines; Indonesia
 - South Asia
Bangladesh; Bhutan; India; Pakistan; and Sri Lanka;

3.4. Some Applications and Findings

3.4 Subnational PPP for Philippines: Steps involved

1

- Consolidate price and expenditure data by region (17 regions)

2

- Construct/Build-up Database

3

- Determine total number of varieties by specified item codes (CPI: 12,000+; ICP: 1273)

4

- Identify variety overlaps and select varieties that are priced by at least two regions/provinces (CPI: 3,298; ICP: 672)

5

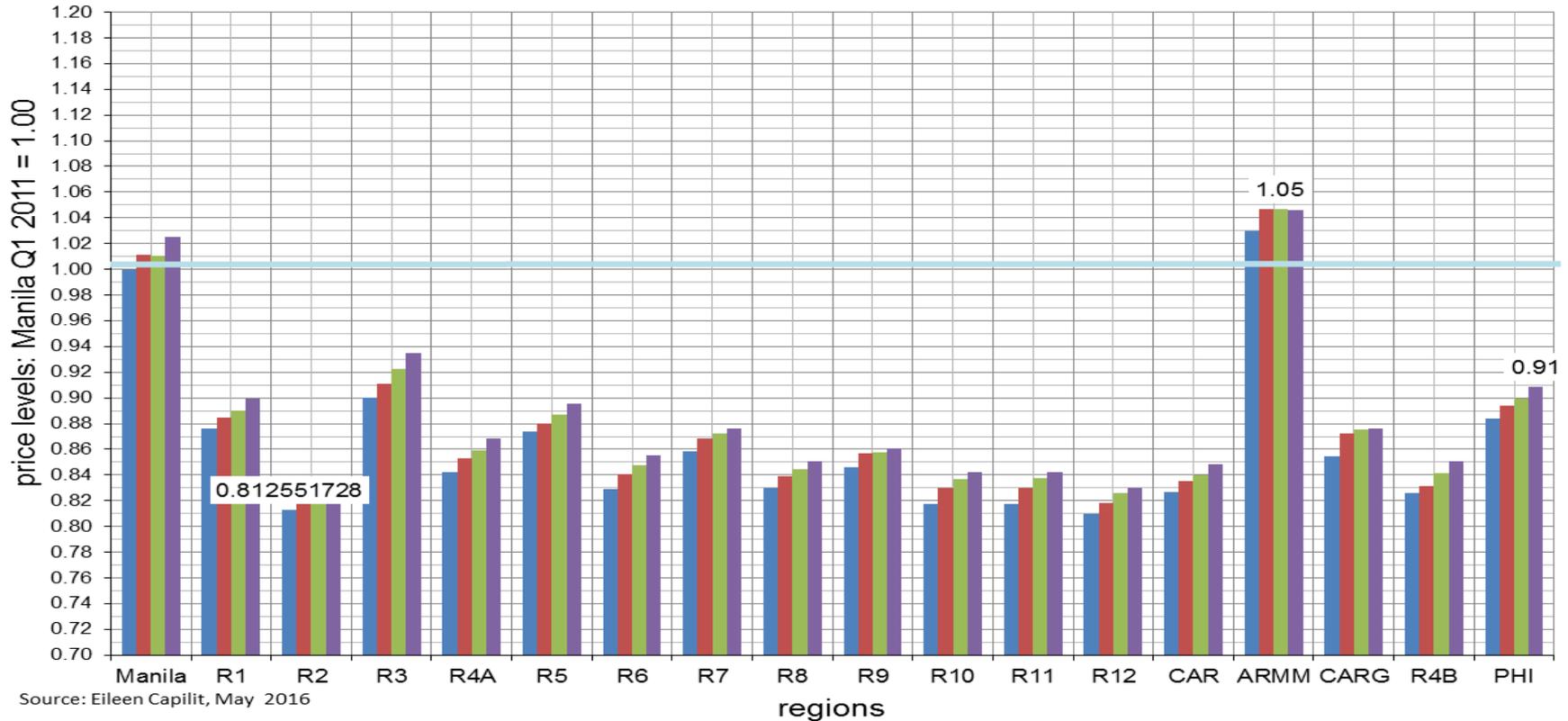
- Data editing and validation (intra- and inter-region; intra- and inter-quarter; simultaneous)

6

- PPP Calculation (four digit- CPD unweighted; Group - EKS)

4. Philippines: Regional Price Level Indices, Q1 - Q4 2011

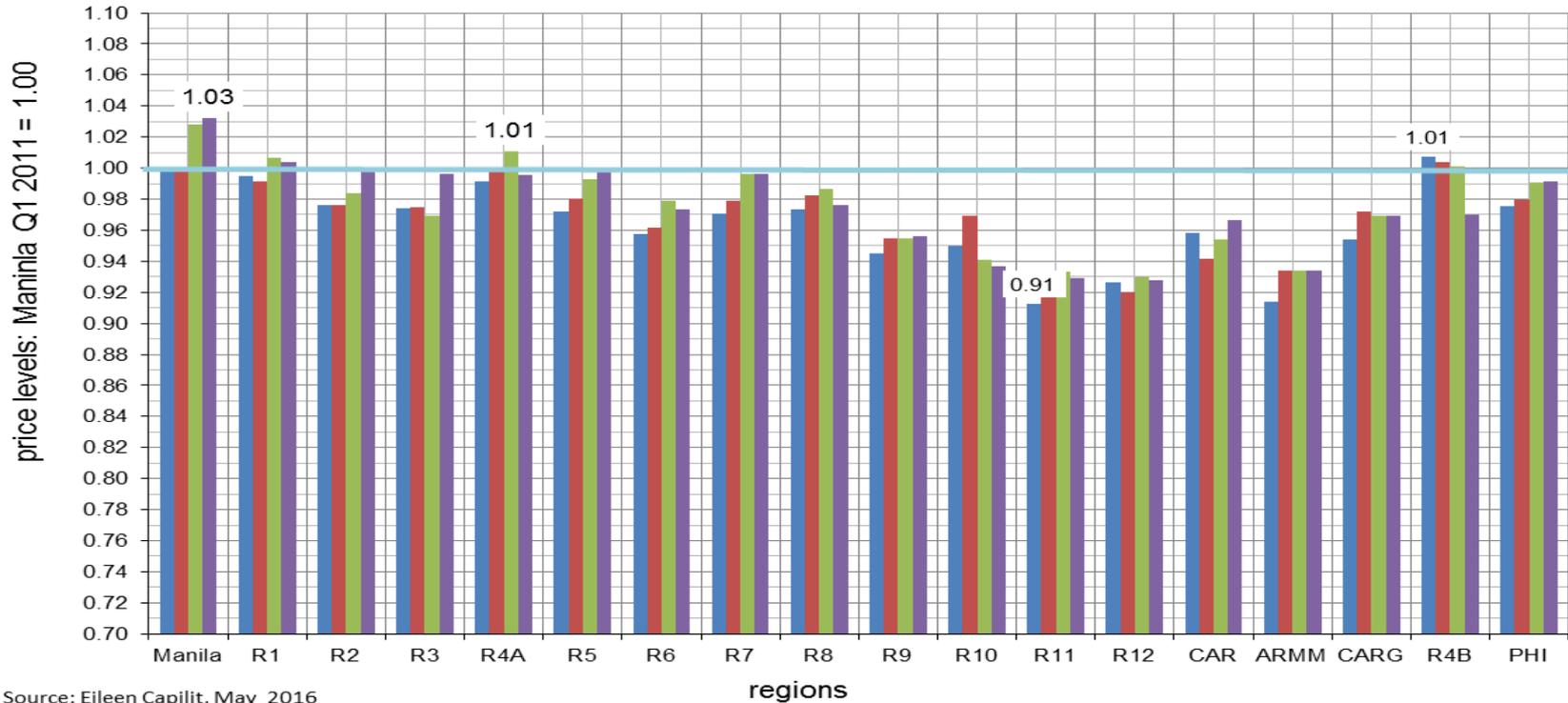
Chart 1. Comparative Price Level Indices by Region, Q1 - Q4 2011
Household Consumption Expenditure: Consumer Price Index, Manila Q1 2011 = 1.00



Source: Eileen Capilit, May 2016

4. Philippines: Regional Price Level Indices, Q1 - Q4 2011

Chart 2. Comparative Price Level Indices by Region, Q1 - Q4 2011
Household Consumption Expenditure: International Comparison Program, Manila Q1 2011 = 1.00



Source: Eileen Capilit, May 2016

4. PCE (HFCE): Price Level Indices, 2011

Philippines, Manila and Areas Outside Manila

Major Group	ICP			CPI			ICP & CPI Difference (%)	
	PHI	Manila	AOM	PHI	Manila	AOM	Manila	AOM
PERSONAL CONSUMPTION EXPENDITURE	1.00	1.03	0.98	1.00	1.12	0.96	(8.6)	1.9
01 FOOD AND NON-ALCHOLIC BEVERAGES	1.00	1.05	0.98	1.00	1.06	0.98	(0.9)	(0.1)
02 ALCOHOLIC BEVERAGES AND TOBACCO	1.00	1.01	1.00	1.00	1.01	1.03	0.1	(2.7)
03 CLOTHING AND FOOTWEAR	1.00	1.05	0.98	1.00	1.10	0.97	(4.7)	1.2
OTHER FUELS AND ROUTING MAINTENANCE OF THE HOUSE	1.00	0.96	1.00	1.00	1.11	0.95	(14.1)	5.5
06 HEALTH	1.00	1.04	0.98	1.00	0.95	1.02	9.5	(3.9)
07 TRANSPORT	1.00	1.05	0.98	1.00	0.98	1.01	7.1	(2.6)
08 COMMUNICATION	1.00	1.04	1.00	1.00	1.50	0.90	(30.6)	11.0
09 RECREATION AND CULTURE	1.00	1.01	1.02	1.00	1.00	0.99	0.9	2.8
10 EDUCATION	1.00	1.05	0.99	1.00	1.10	0.96	(5.2)	3.1
11 RESTAURANTS AND MISCELLANEOUS GOODS AND SERVICES	1.00	1.28	0.83	1.00	2.79	0.53	(54.1)	56.4
	1.00	1.05	0.98	1.00	1.09	0.95	(3.8)	3.5

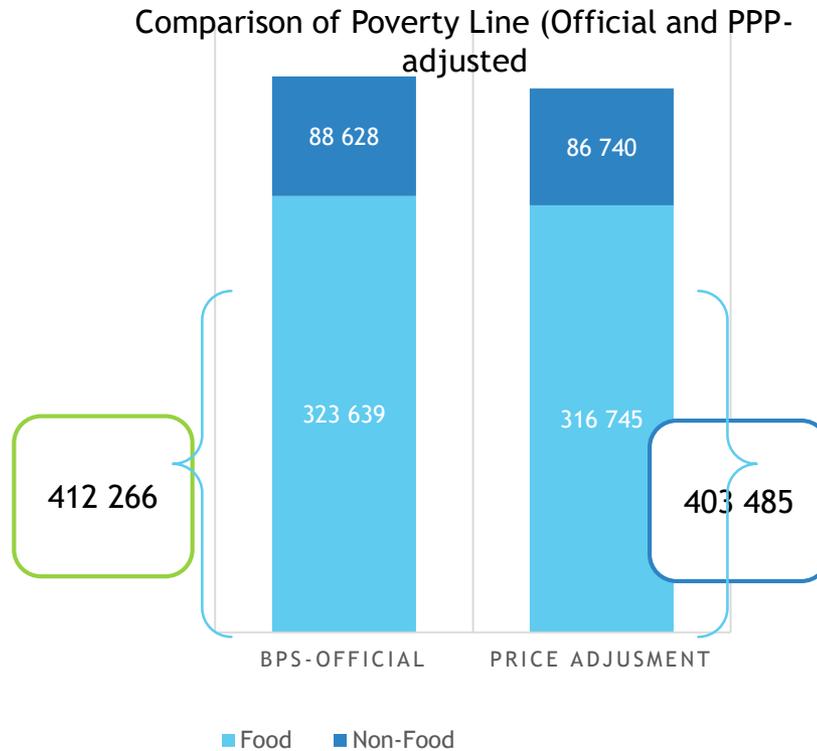
Source: Author's Estimates

4. Inferences from Previous Studies*

- Use of subnational PPP as deflator for income by region, increases HDI for all regions in 2012
 - Average increase of about 5%
 - Maximum of about 16% for ARMM
- Effect to Philippines' HDI:
- No. of Region falling into low category
 - HDI: 1 (for all years for both approaches)
 - Income Dimension:
 - Current Method: 10 for 2009 and 2012
 - Proposed Method (Subnational PPP):
 - 8 for 2009 and 6 for 2012

Capilit, Eileen and Dikhanov, Yuri, Subnational Purchasing Power Parities: Integrating International Comparison Program and Consumer Price Index in Asia. Invited paper 60th International Statistical Institute, 26-31 July 2016, Rio De Janeiro, Brazil

Inferences from Previous Studies*: Indonesia



Bukhari, Ika, and Khairiyah, BPS-Statistics Indonesia, 2019

5. Conclusions and Way Forward

5. Conclusions

- It is quite possible to integrate ICP with national statistical program.
- Applying ICP concepts and methods allow estimation of across space and time indexes at the national level
- RPLIs/SPLIs from Philippines' CPI for some expenditure categories closely approximates the relationships of capital city to national price levels from the 2011 ICP
- E.g. For Philippines, ICP price survey for food, and other shop items may be limited to the capital city . CPI relationships of capital to national may be used to calibrate the ICP prices to national average.
- Costs for ICP price surveys can be reduced by data mining from the CPI

6. Way Forward

- Results are still subject for review and are not considered official
- The same study must be extended to and verified with other geographically large or culturally diverse economies in the region
- The results of this paper can:
 - serve as an advocacy document for users and stakeholders of the Philippine Statistical Authority
 - strengthen the need for institutionalizing the subnational PPP calculations for improving important policy indicators (such as the HDI)

5. Way Forward

- Review and improve methods in current and past ICP-Asia Pacific research initiatives:
 - the PPP Updating which used the combinatorial approach for deriving the core list of items from household and nonhousehold sectors and the collection of prices only at the capital city;
 - the inclusion of ICP core list items in the CPI baskets (or vice versa) following the same SPDs
 - Extend the study to capture PPPs more relevant to poverty estimation



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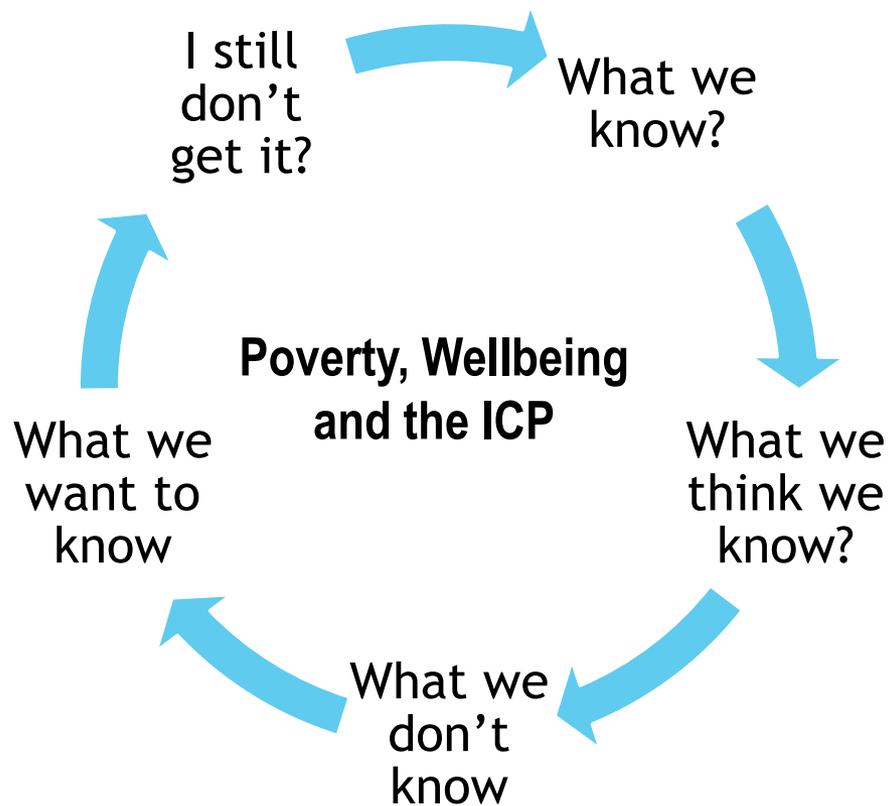
**IPS 264
Poverty, wellbeing and the purchasing power parities of
the international comparison program***

Eileen P. Capilit
Economic Statistician/Independent Consultant

22 April 2019; 10:30 – 12:30, Room 403, Level 4

*The views expressed in this presentation are those of the presenter and do not necessarily reflect in any way the views and policies of the organizations. The presenter is on sabbatical from the ADB and currently affiliated with above international organizations as an independent consultant and/or resource person.

The cycle of knowing what we don't know...



Key Questions

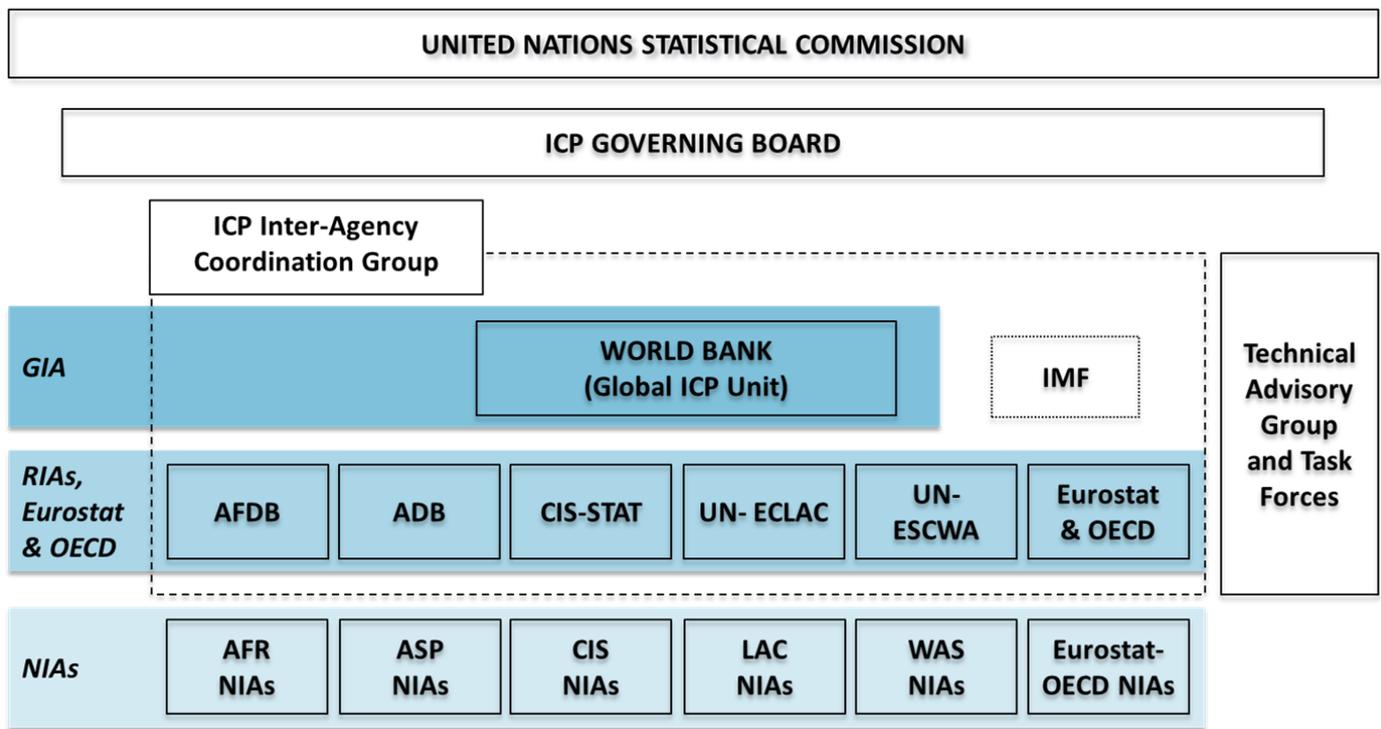
- I. Background
- II. General approaches and methods
- III. Some results and inferences
- IV. Conclusions and way forward

Background

Motivations

- The PPP generated from benchmark ICP (2005 and 2011) are generally accepted as “fit” for cross-country comparisons of economic activity, wellbeing and relative price levels
- The use of the same relevant PPPs for poverty measurement, however, has always been the subject of debate
- In the meantime, the UNSC has recommended the institutionalization of the ICP at the national, regional and global level
- *Ensuring that “no one is left behind” - the key tenet of the 2030 Agenda, necessitates: greater integration and data integration at all levels*

ICP Governance Framework



A resource-intensive worldwide statistical initiative led by the World Bank under the auspices of the UNSC and coordinated across the global through RIA

GIA = Global Implementing Agency, RIA = Regional Implementing Agency, NIA = National Implementing Agency

The ICP: Objectives

provide comparable price and volume measures of GDP and its major aggregates among countries within and across the region.

- ICP benchmarks compute
 - Purchasing Power Parity (PPP) estimates
 - internationally comparable price levels
 - PPP-adjusted economic aggregates and wellbeing (AFCH)
- PPP is a key input for deriving international poverty line

The need for poverty PPPs

- ▶ BUT: Is the PPP for household consumption component of GDP (consumption PPPs for short) appropriate for poverty measurement purposes?
- ▶ Two features of consumption PPPs that make it conceptually weak for poverty related work:
 - (i) They are based on an international comparison of prices of the goods and services that make up household consumption at the GDP level. Thus, relative prices of automobiles across countries will enter the computation of these PPPs. More generally, the quality of goods and services that are used in generating these PPPs tend to be relatively high quality.
 - (ii) the relative prices of various goods and services are “aggregated” using expenditure shares from the national accounts.

General Approaches and Methods

ICP : *Beyond the Big Mac Index*

Major elements in the ICP:

- ✓ Collection of Price and Expenditure data
 - Preparation of product lists
 - Design of an appropriate survey framework
 - Price collection
 - Validation and editing of price data
- ✓ Aggregation of data leading to PPPs
 - At the BH level, lowest level aggregate for which expenditure data are available (CPD)
 - Above BH level, where basic heading level PPPs are aggregated using respective expenditure weights(GEKS)

ICP in Asia and the Pacific: Scope and Coverage

- Conceptual Framework: Multilateral Price Indices and 2008 System of National Accounts (ensures comparability of GDP estimates and its components)
- Data Requirements: Prices and Gross Domestic Products Values
- Geographic Coverage: Twenty-two economies in the region
 - High Income - Brunei Darusallam; Hong Kong, China; Singapore; Taipei, China; **Macau, China**
 - Mekong - Thailand; Laos; Cambodia; **Myanmar**; Viet Nam
 - Southeast Asia - PRC; Mongolia; Malaysia; Philippines; Indonesia;
 - South Asia - Bangladesh; Bhutan; India; Pakistan; Nepal; Sri Lanka; Maldives; Fiji

Data Requirements

The Expenditure Classification

▶ GDP main aggregates further divided into

28 Categories

63 Groups

126 Classes

155 Basic Headings – this is the level at which national accounts data are required for the ICP

ADB

Poverty-specific PPPs

An ADB research initiative designed to compute poverty PPP using different sources of prices and weights, primarily for the purpose of converting poverty lines for estimating poverty incidence. Two modest objectives:

- to compile a set of PPPs for participating countries for purpose of converting the international poverty lines (IPL) into local currency units (based on methodology endorsed by the 2005 Poverty Advisory Group);
- conduct major investigation into the sensitivity of the estimated PPPs to prices collected from PS-PPP and price surveys undertaken in the ICP for Asia and Pacific.

Poverty-specific PPPs

Data requirements:

1. average national prices for HHs consumption items typically consumed by the “poor”, for each country
2. prices generated by the poverty-specific price survey conducted specifically for the purpose of collecting prices that were considered representative of the consumption of the poor; and

2008: ADB - 2005 PS-PPP research explored both data in the computation of the PPPs at the basic heading level

2011: Deaton and Dupriez’ recommendations consistent with the 2008 work of ADB

2017: WB PS-PPP for Africa used only ICP Data

Comparative PS-PPP items:
2005 and 2011

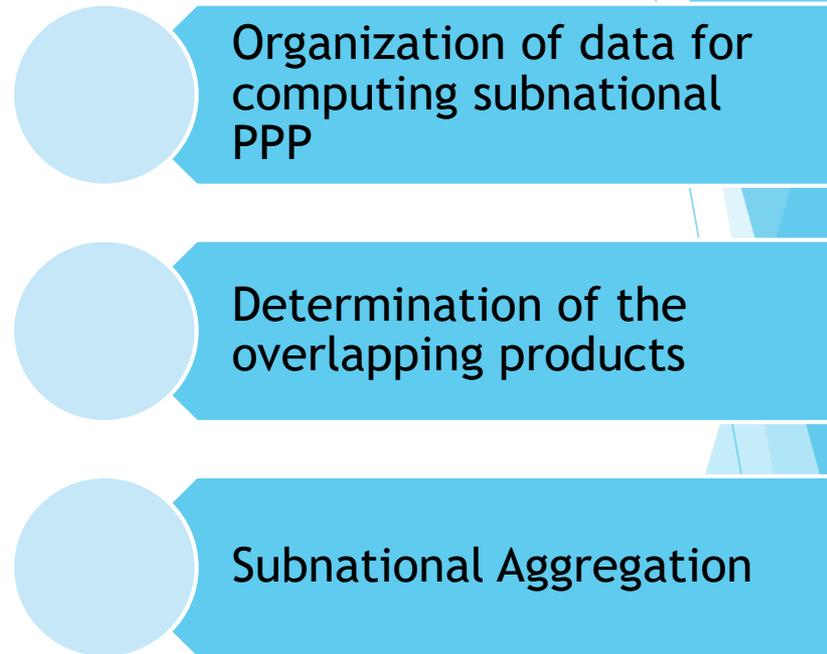
	2005	2011
No. of BHs	45	33
No. of Items	155	78

PPP/PLI at the subnational level: Major Considerations

Data requirements:

- Expenditure Weights from Household Expenditure Survey (which is the same as the ones used for calculating CPI at the aggregated level)
- Average Prices for each variety by Region from CPI
- Average Prices for each item by region from ICP

Steps for compilation



What did we find: Some results and inferences

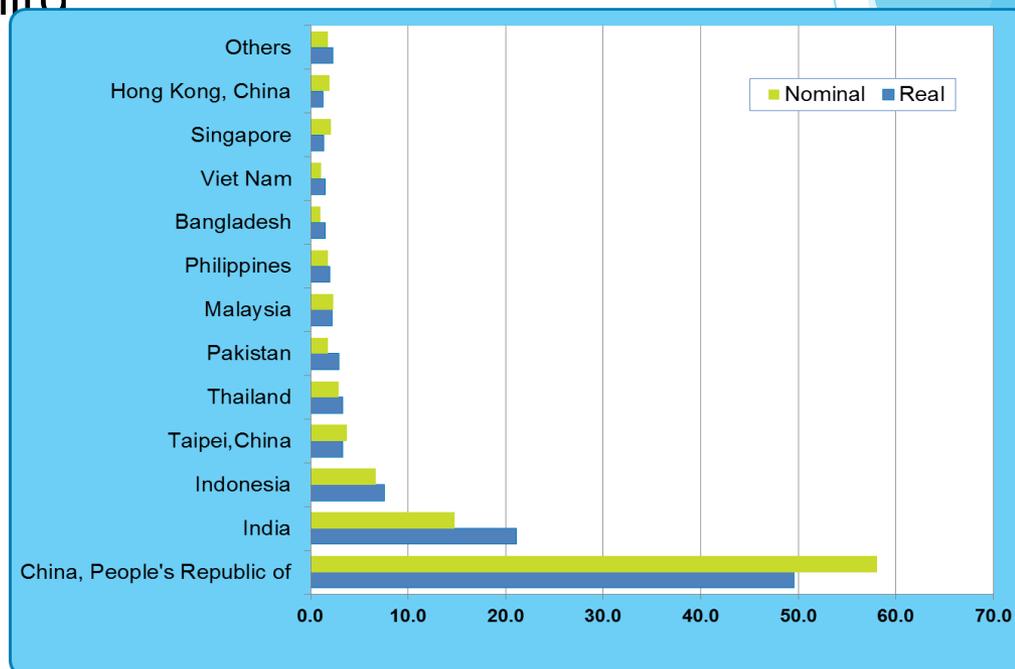
Comparative Exchange Rates, Purchasing Power Parities, and Price level Indices, GDP, 2011

Economy	Exchange rate (LCU per HK dollar)	PPP (Hong Kong, China = 1.00)	PLI (Hong Kong, China = 100)
Bangladesh	9.53	4.24	44
Bhutan	6.00	3.09	51
Brunei Darussalam	0.16	0.13	81
Cambodia	521.39	246.65	47
China, People's Republic of	0.83	0.64	77
Fiji	0.23	0.19	83
Hong Kong, China	1.00	1.00	100
India	6.00	2.77	46
Indonesia	1126.73	660.35	59
Lao People's Democratic Republic	1031.61	451.84	44
Macao, China	1.03	0.84	82
Malaysia	0.39	0.27	68
Maldives	1.88	1.56	83
Mongolia	162.58	98.35	60
Myanmar	105.08	43.02	41
Nepal	9.51	4.51	47
Pakistan	11.09	4.46	40
Philippines	5.56	3.27	59
Singapore	0.16	0.16	101
Sri Lanka	14.20	7.08	50
Taipei, China	3.79	2.77	73
Thailand	3.92	2.26	58
Viet Nam	2634.86	1228.43	47

Summary Results: 2011, ICP Asia and the Pacific

- Price level was highest in Singapore and lowest in Pakistan
- Exchange rates would have understated the size of Asia and the Pacific economy by a third

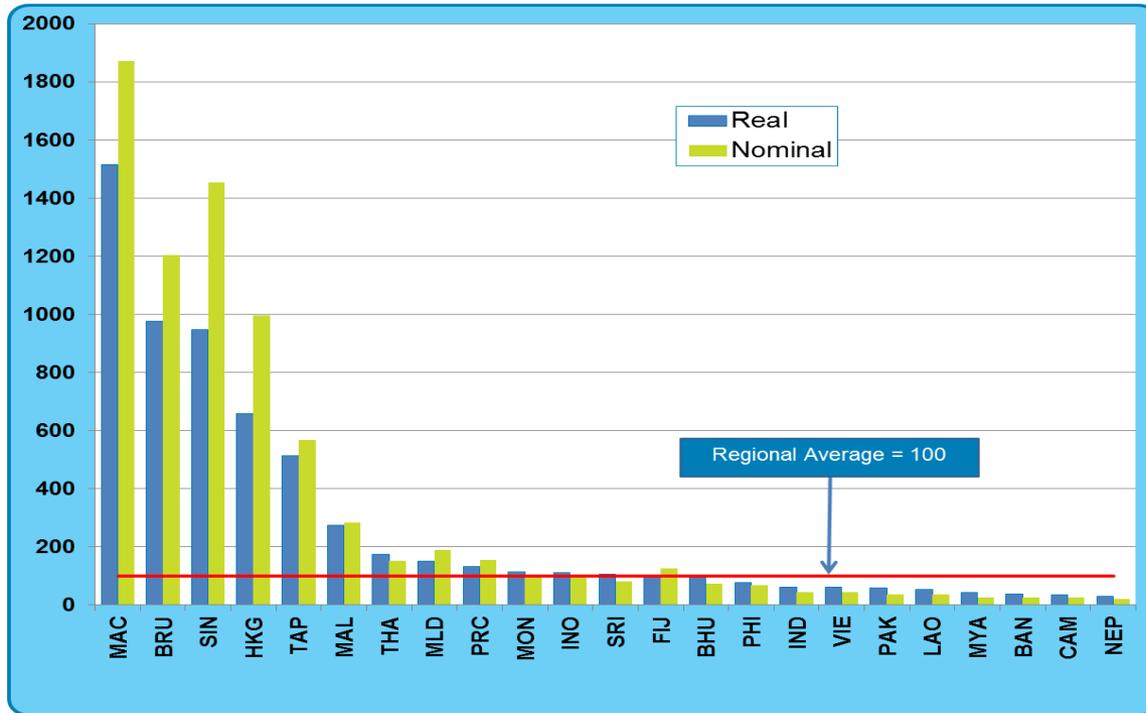
- Economy Shares Within the Region
Real and Nominal GDP, 2011



Richest and Poorest Economies

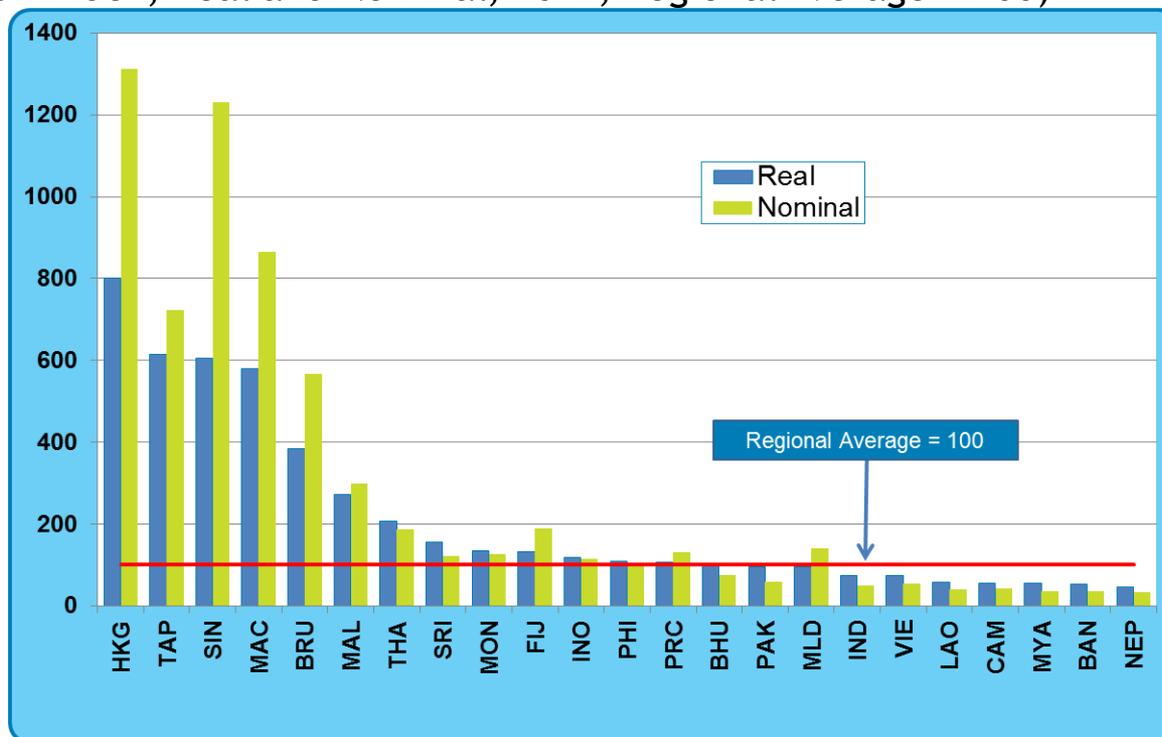
Divergence between Rich and Poor Economies is Striking

(Per Capita GDP Index, Real and Nominal, 2011, Regional Average = 100)



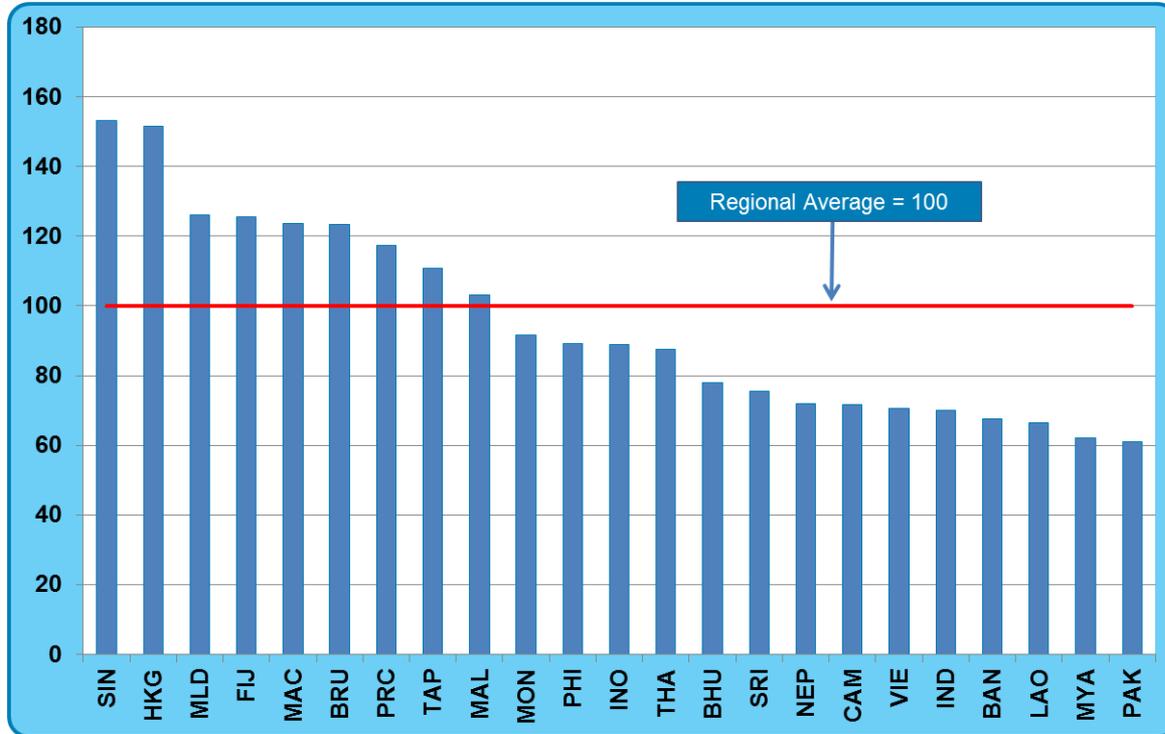
Range of Economic Well-Being Very Wide

(Per Capita AFCH Index, Real and Nominal, 2011, Regional Average = 100)



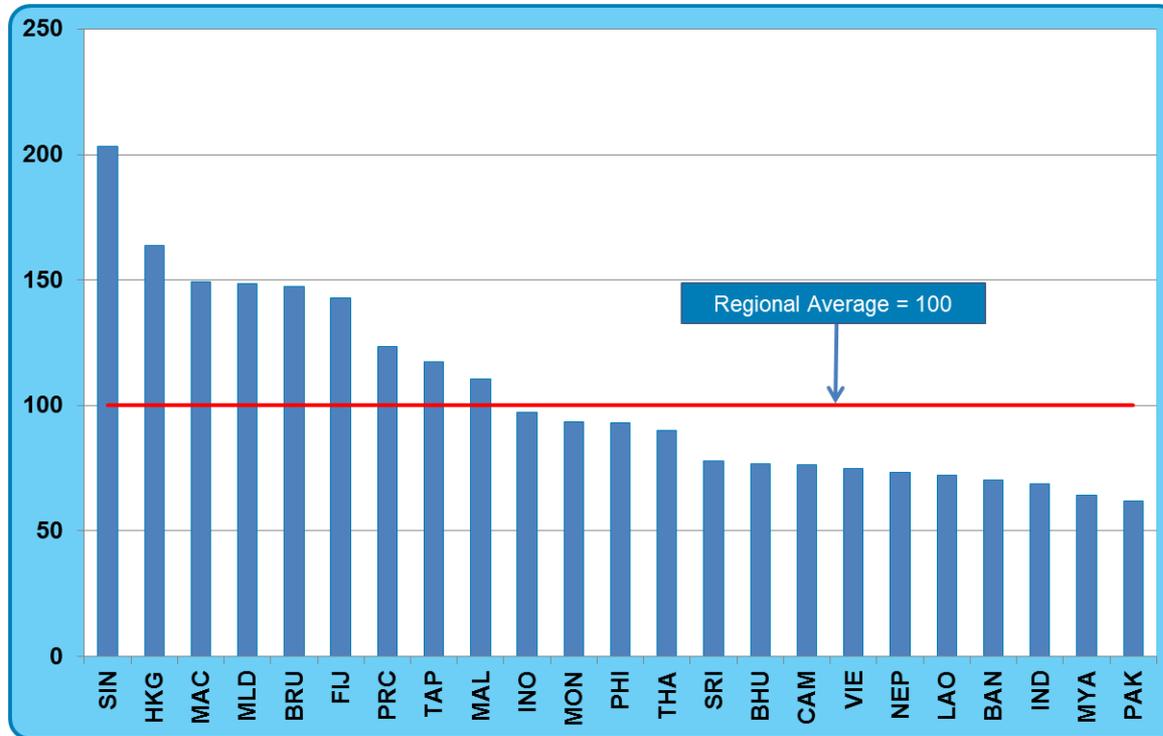
Relative Living Costs

(Price Level Indices, GDP, 2011, Regional Average = 100)



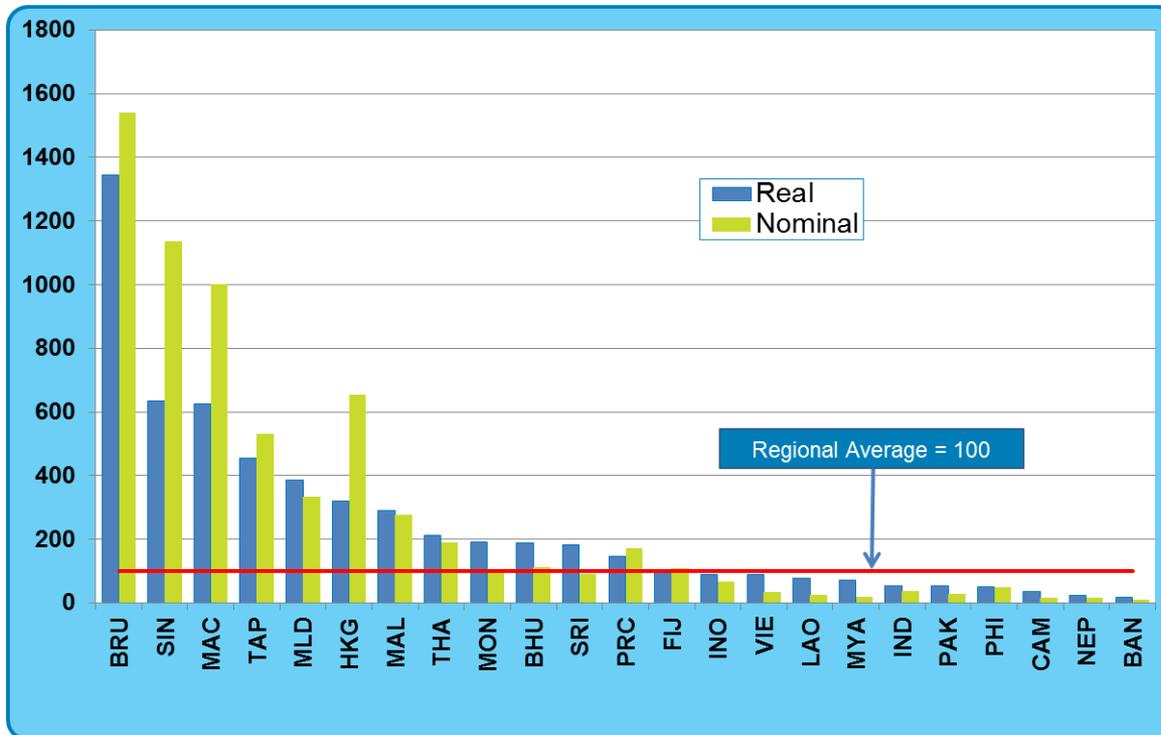
Relative Living Costs

(Price Level Indices, AFCH, 2011, Regional Average = 100)



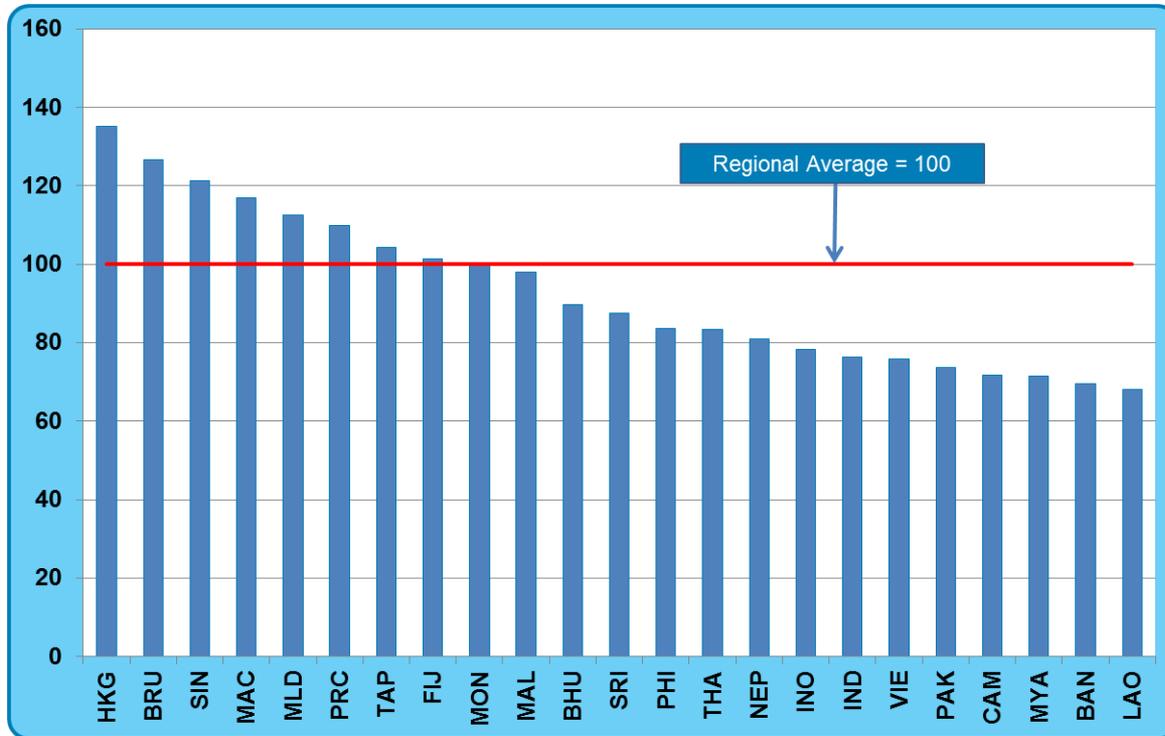
Public Sector Expenditures

(Per Capita GFCE Index, Real and Nominal, 2011, Regional Average = 100)



Relative Living Costs

(Price Level Indices, GFCF, 2011, Regional Average = 100)



PS-PPP Research: Mixed results

- ▶ Consistency: ADB (2008), Deaton and Dupriez (2011) and World Bank (2017)
 - ▶ *PPPs estimated with poverty-specific weights are close to the PPPs from regular ICP household consumption PPPs*
- ▶ Inconsistencies:
 - ▶ *ADB (2008): Prices collected from poor-specific consumption basket yield significantly different PPPs from that of the regular ICP consumption PPPs. But the magnitude and directions vary from country to country*
 - ▶ *WB (2017) and ADB insights from validation workshops: The overall difference is negligible between regular ICP and the PPP where non-poverty items was removed*

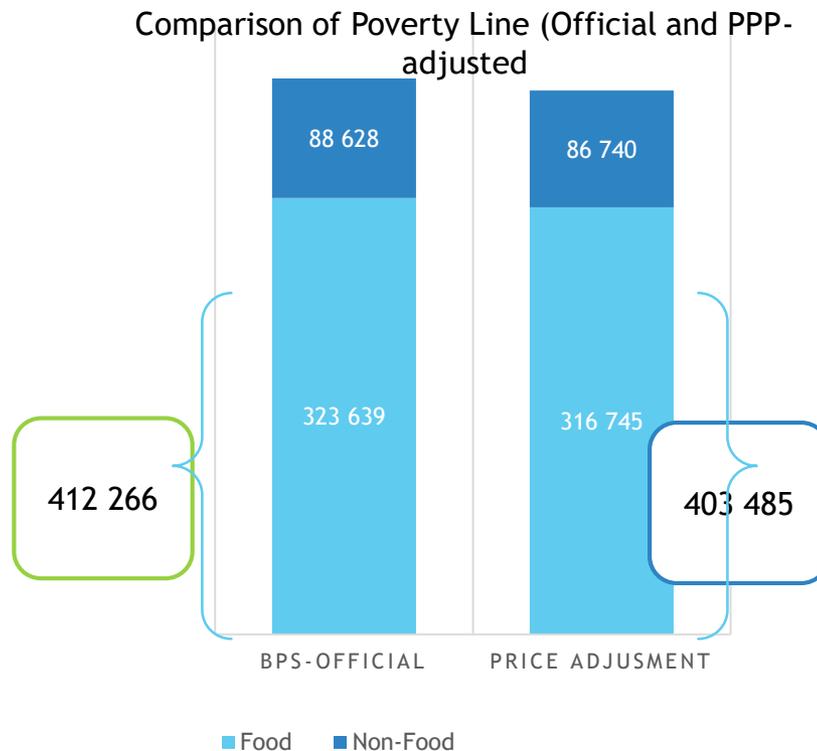
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Conclusions and Way Forward

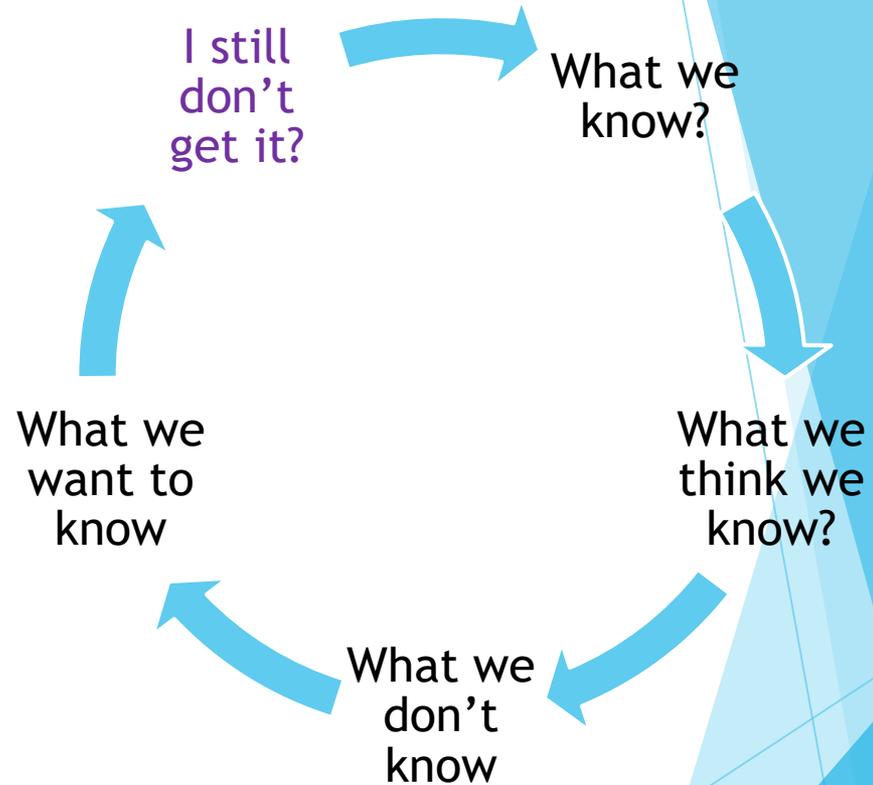
Conclusions and Way Forward

- Research studies on ICP for spatial and time series analysis must continuously be pursued:
 - the inclusion of ICP core list items in the CPI baskets (or vice versa) following the same SPDs
 - Subnational PPP estimation
 - Cost of living studies and adjustments
 - Conduct Poverty-specific price surveys both at all levels
 - SUT compilation to improve national accounts components of the ICP
 - Etc.

Poverty or wellbeing: what do we really capture in international comparison program?

Two points

1. Identify needs and used "Fit-for-purpose" data or be consistent in applying the FPOS
2. Integration is needed:
 1. Institutional
 2. Methods and frameworks
 3. Data





THANK YOU

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**Poverty, wellbeing and the purchasing power parities of
the international comparison program***

Eileen P. Capilit

Economic Statistician/Independent Consultant
UNESCAP, OECD, GOPA Statistics, ADB

22 April 2019; 10:30 – 12:30, Room 403, Level 4



Questions?

References

- ▶ Asian Development Bank, 2006-2017 presentations
- ▶ PPP eLearning course, World Bank Group, <https://www.worldbank.org/en/programs/icp/brief/e-learning>

Thank you

**Eileen Pantua Capilit
Economic Statistics Consultant
Statistics Division, UN ESCAP**

Eileen.Capilit@un.org; ecapilit@yahoo.com

Skype ID: e_1002

**International Workshop on International Comparison Program
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