

ONLINE APPENDIX

Using Online Prices for Measuring Real Consumption Across Countries

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I - Details on PPP methodology

To deal with the unbalanced nature of the panel, we follow ICP and run a Country Product Dummy (CPD) regression in every quarter and for every basic heading k :

$$\log p_{ij}^k = \eta_i^k + \eta_j^k + \epsilon_{ij}^k$$

The price of item i in country j is ‘explained’ using item dummies η_i and country dummies η_j . The item dummies capture the international price of the item, while the exponent of each country dummy is the estimated PPP for that particular basic heading, $P_{kj} = \exp(\eta_j^k)$. The country dummy for the reference country (in our case the United States) is omitted, so $P_{kUSA} = 1$.

We use the expenditure data from ICP 2011 for further aggregation using a multilateral GEKS methodology. Let s_{kj} be the expenditure share of basic heading k in total consumption, then we can define the Laspeyres index $P_{jb}^L = \sum_k s_{kb} P_{kj} / P_{kb}$ using expenditure shares in the

reference country b , the Paasche index $P_{jb}^P = (\sum_k s_{kj} P_{kb} / P_{kj})^{-1}$ using country j expenditure shares, and the Fisher index as the geometric mean: $P_{jb}^F = (P_{jb}^L \times P_{jb}^P)^{\frac{1}{2}}$. The Fisher index can be computed using any reference country and results differ depending on the choice of reference country, so the final step is to compute the reference-country independent GEKS PPP for all M countries:

$$P_j^{GEKS} = \left(\prod_b^M P_{1b}^F P_{bj}^F \right)^{\frac{1}{M}}$$

PPPs are expressed as national currency per unit of the base country (in our case the US dollar). To ease interpretation across countries and samples, we also compute price level indices (PLIs), dividing the PPPs by the country’s nominal exchange rate with the US dollar. PLIs are unit-free and reflect whether prices are higher ($PLI > 1$) or lower ($PLI < 1$) in each country relative to the reference country.

FIGURES AND TABLES

TABLE A1 —DATA SOURCE COMPARISON

For Food, Fuel, and Electronics*	BPP (2017)	ICP (2011)
Data collection	Daily	Few times a year
Publication frequency	Quarterly	~6 years (3 years for OECD)
Number of items	267	238
Products per item-country (mean)	30	10-15 homogeneous** 70-100 heterogeneous
Type of coverage	Goods	Goods & Services
Locations	Urban	Urban & Rural
Countries	11	199

Notes: *COICOP codes for Food and Beverages (01), Fuel (07.2.2), and Electronics (From 09.1.1 to 09.1.4) **Estimates in World Bank (2013).

Source: Authors' calculations based on World Bank (2013)

TABLE A2—ITEM LIST COMPARISON

Basic Heading	Number of Items		Item Examples	
	BPP	ICP	BPP	ICP
Rice	4	9	White Rice, All Brands, Basmati White Rice, All Brands, Long-grain	Basmati Rice Long-grain rice – Family Pack
Other cereals, flour and other products	12	6	All-purpose Flour, All Brands, Wheat All-purpose Flour, All Brands, All Other Cereal for Breakfast, Kellogg's, All Other	Wheat flour, not self-rising Wheat flour, not self-rising Cornflakes (Kellogg's)
Pasta	7	6	Pasta, All Brands, Spaghetti Pasta, Barilla, Penne (including whole grain)	Spaghetti Short Pasta
Beef and Veal	2	8	Beef, All Brands, Tenderloin roast or steak Beef, All Brands, Ground	Beef, fillet 100% Beef, minced
Poultry	1	6	Chicken, All Brands, Breasts	Chicken breast without skin
Fresh, chilled or frozen sea food	2	13	Shrimp, All Brands, Fresh Uncooked Shrimp, All Brands, Frozen Uncooked	Whole Shrimps Shrimps
Preserved or processed fish and seafood	4	5	Canned Tuna, All Brands, In Oil Canned Tuna, All Brands, In water Canned Tuna, All Brands, All Other	Canned Tuna without skin Canned Tuna without skin Canned Tuna without skin
Cheese	7	6	Cream Cheese, Philadelphia, Regular Cream Cheese, Philadelphia, Fat free, low fat Cream Cheese, Philadelphia, All Other	Cream Cheese Cream Cheese Cream Cheese
Eggs and egg-based products	1	2	Eggs, All Brands, Chicken Eggs, All Brands, Chicken	Large Size Chicken Eggs Medium Size Chicken Eggs
Butter and margarine	3	3	Butter, All Brands, Salted Butter, All Brands, All Other	Salted Butter Butter, unsalted
Other edible oils and fats	6	6	Olive Oil, All Brands, Extra Virgin	Olive Oil
Fresh or chilled fruits	7	13	Apples, All Brands, Red	Apple, Red Delicious
Fresh or chilled vegetables	5	15	Onions, All Brands, White, Yellow or Brown Onions, All Brands, Red	Onion Onion
Food Products	17	13	Ketchup, Heinz, Regular Ketchup, All Brands, Regular Ketchup, All Brands, All Other Ketchup, All Brands, Reduced Sodium/Sugar	Tomato Ketchup Tomato Ketchup Tomato Ketchup Tomato Ketchup
Coffee, Tea and Cocoa	16	7	Chocolate Powder, Nesquick, Regular Chocolate Powder, Nesquick, All Other Coffee, All Brands, Ground (Excluding decaf.) Coffee, All Brands, Ground (Excluding decaf.) Coffee, Illy, Ground (including decaf)	Cocoa Powder, Tin Cocoa Powder, Tin Coffee Roasted 100% Arabica Coffee Roasted 100% Robusta Instant Coffee, Nescafe Classic
Mineral Waters, Soft drinks and vegetable Juices	35	6	Sodas, Coca Cola, Classic or Regular Sodas, Pepsi, Classic or Regular Mineral Water, All Brands, Still Mineral Water, Evian Mineral Water, Fiji	Coca-Cola/Pepsi, Large Coca-Cola/Pepsi, Large Mineral Water Mineral Water Mineral Water
Audio-visual, photographic and information processing equipment	82	27	Laptop, Apple, MacBook, 13 inch Laptop, Acer, 14-16 inch Television, Phillips, LED 32" Television, Samsung, LED 32" Television, All Brands, LED 32" Television, LED, 40-43", LG Camera Compact, Canon, 20-24mpx Camera Compact, Nikon, 20-24mpx Camera Compact, Sony, 20-24mpx	Apple MacBook laptop computer Acer Aspire One netbook Phillips 3000 series LCD TV 32" Samsung Series 5 LCD TV 32 Inches LCD Television LG LD Series LCD TV 42" Digital Compact Camera Digital Compact Camera Digital Compact Camera
Fuels and lubricants for personal transport equipment	4	5	Petrol, All Brands, Low RON Petrol, All Brands, Medium RON Petrol, All Brands, High RON Diesel	Petrol Petrol, Super Petrol, Superplus Diesel fuel

Source: Authors' calculations based on BPP and ICP 2011 data.

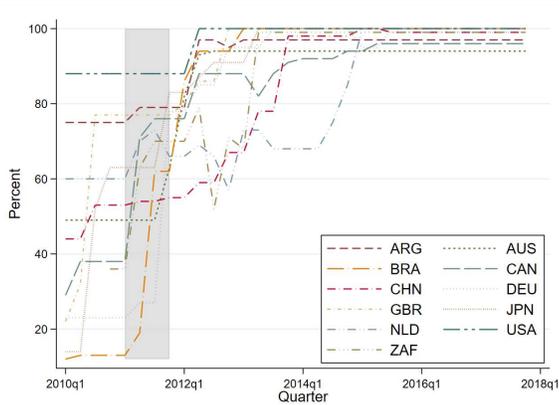
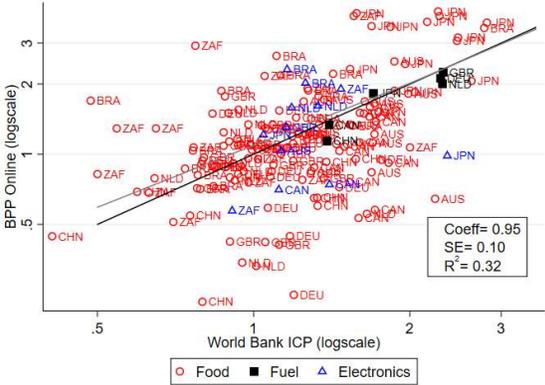
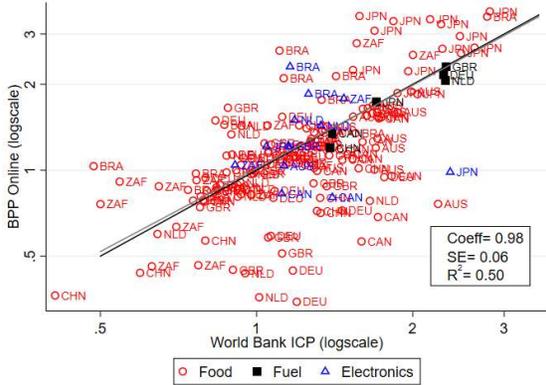


FIGURE A1: SHARE OF BASIC HEADINGS COVERED BY MATCHED BPP DATA

Note: Share of all basic headings in ICP food, fuel, and electronics categories. 2011 quarters shaded in gray.



PANEL A: ONLINE PPP IS AN ANNUAL AVERAGE



PANEL B: ONLINE PPP FROM QUARTER WITH SMALLEST DIFFERENCE

FIGURE A2. BASIC HEADING COMPARISON ICP VS BPP FOR 2011