

Real Consumption in Real-time: Using Online Prices for International Comparisons

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1. Questions

Official statistics on cross-country comparative price levels are published infrequently and with a long lag. The latest set of Purchasing Power Parities (PPPs), published by the International Comparison Program (ICP), is for 2011 and the results of the 2017 round will become available in late 2019 at the earliest. Furthermore, changes in observed PPPs over time (between rounds) tend to be poorly approximated by differences in national inflation rates and the reasons for this are poorly understood. As a result we lack a timely and reliable perspective on comparative consumption, income and poverty levels around the world. This paper investigates the merits of using new price data that is collected online by the Billion Prices Project (BPP). The first aim of this research is to establish whether online prices can be used for more frequent, up-to-date estimates of relative prices.¹ The second aim is to use insights from online prices to improve official statistics on PPPs. To these ends, we will answer two questions:

1. How well do the BPP-based relative prices match the ICP prices?
2. Why do changes in relative prices diverge from inflation differences?

2. Method

Answering question 1 will start at the level of individual products and aim to establish whether and when relative prices collected online from BPP match or diverge from ICP prices. By adapting the econometric tools from ICP – specifically the country-product dummy method – we can test whether there are significant differences in specific product categories. We can then assess whether such differences are part of systematic divergence, related for instance to the degree of product heterogeneity, the intensity with which products are traded or the development level of specific countries.

Answering question 2 will compare the change in relative prices with an inflation measure based solely on internationally-matched prices and with an inflation measure based on a broader universe of products. Again, the question will be when divergence between relative prices and inflation occurs and whether this is related to characteristics of the product category and/or countries. This will help shed light on how to interpret revisions to official relative prices.

3. Data

The BPP collects online prices from retailers that are active online and offline. Price data is concentrated in a number of product categories, specifically food, clothing and electronics. BPP prices are hand-matched across countries within similar categories and using similar methods as in ICP to allow for a comparison of results. Data cover 15 countries but with wide geographic spread and across different development levels. Data are available quarterly, starting in 2010, with growing coverage of products and countries over time.

¹ A first exploration suggested major potential in BPP prices to serve these goals, see Cavallo, Diewert, Feenstra, Inklaar and Timmer, 2018. "Using Online Prices for Measuring Real Consumption across Countries," *AEA Papers and Proceedings*, 108: 483-87.