Initiative on the Digital Economy
Technology is Reshaping Economic Measurement
The Billion Prices Project

April 10, 2015
## Types of Data

<table>
<thead>
<tr>
<th>Designed Data</th>
<th>Organic Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Representative</td>
<td>Non-representative</td>
</tr>
<tr>
<td>Scope is limited</td>
<td>Volume, Velocity, Variety</td>
</tr>
<tr>
<td>Costly</td>
<td>Cheap</td>
</tr>
<tr>
<td>Difficult Access</td>
<td>Open</td>
</tr>
</tbody>
</table>
Disclaimer

• When I say “I”, I mean “We” (Alberto and I)
• When I say “We”, I mean
  • “He” or
  • “They” or
  • “I have no clue who but for sure not me”. 
Online Information and Indexes

Our Approach to Daily Inflation Statistics

1. Use scraping technology
2. Connect to thousands of online retailers every day
3. Find individual items
4. Store and process key item information in a database
   - Date
   - Item
   - Price
   - Description
5. Develop daily inflation statistics for ~20 countries
Countries covered
What have we done?

• Daily Inflation Rates
• “True” Core Inflation Measures
• The Thousand Big-Mac Indexes
Guess the country?
Properties

• Congruence
  – Inflation online is similar to the official inflation at medium frequencies (9 months)

• Anticipation
  – Inflation online moves two to three months before the official release
  – There is at least 20 days for publication lags – we get 1 day!
Core: Two effects

• Direct effect: exclusion procedure
  – Food, gasoline, taxes, etc. are part of the consumption basket.
  – The direct effect is eliminated by exclusion
• Indirect effect: passthrough procedure
  – Oil has an impact on gasoline, transportation, imported items, cost of energy, etc.
  – The indirect effect cannot be computed by exclusion procedures
US Core since March 2009
US Core last 12 months

Index Date

100.0
100.2
100.4
100.6
100.8
101.0
101.2
101.4
101.6

May 1, 14
Jun 1, 14
Jul 1, 14
Aug 1, 14
Sep 1, 14
Oct 1, 14
Nov 1, 14
Dec 1, 14
Jan 1, 15
Feb 1, 15
Mar 1, 15
Apr 1, 15

Index
Thousand BigMac’s Project (TBP)

- The objective of the PPP series is to help determine whether currencies are under or overvalued over time.
- Online prices represent an effective tool to measure PPP fluctuations:
  - Identical items sold around the world
  - Detailed descriptions to achieve a nearly perfect matching
  - Daily Prices
- PPP indices:
  - More than 300 narrow product categories
  - With thousands individually matched items
  - In food, fuel, and electronics
  - High frequency releases
  - Sector and Country-Level Indices

Illustration: International Prices

Compare prices for a bottle of Coke across countries

Apply similar approach to hundreds of products on a daily basis

Price Stats PPP Indices
TBP’s

4/23/2015
RER: Official and PS

Real Exchange Rate

Brazil

PS RER
Official RER
Brazil Overvaluation
UK Overvaluation

[Chart showing overvaluation trends from June 2010 to June 2015, with a peak near the end of 2014 and a slight decline by June 2015.]
What is next?

• Economic Activity
  – Retail Sales and Consumer Demand
  – Supply Disruptions
  – Employment and Labor Markets
  – Real Estate and GDP
What do “I” need?

• Well, I just need... one billion prices... Well, actually...

One trillion!!!!