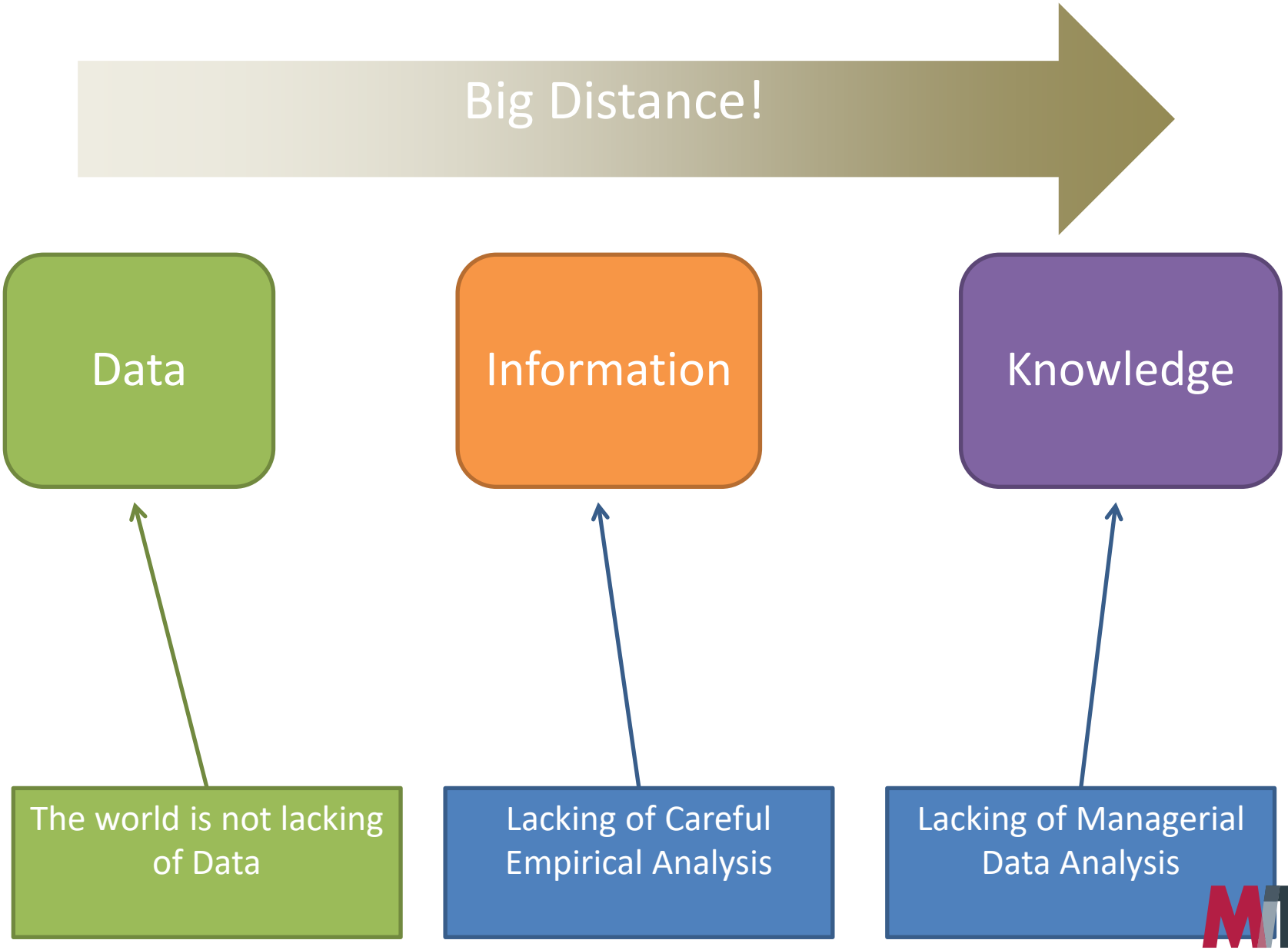
Big Data and Economics: Brazil

Roberto Rigobon

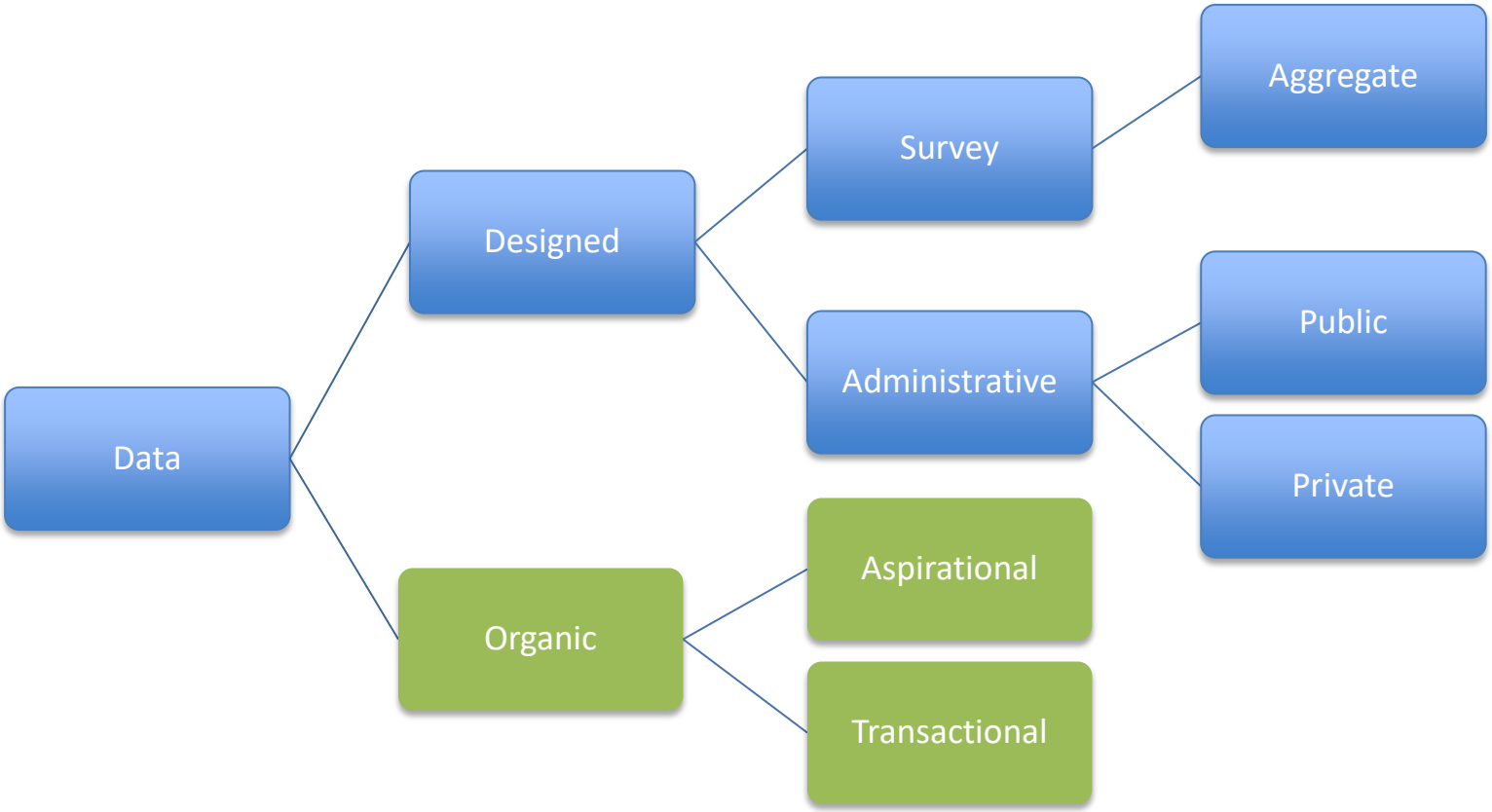
MIT, CSAC, CNStat, NBER

MANAGEMENT
SLOAN SCHOOL



MIT MANAGEMENT SLOAN SCHOOL

Different Types of Data



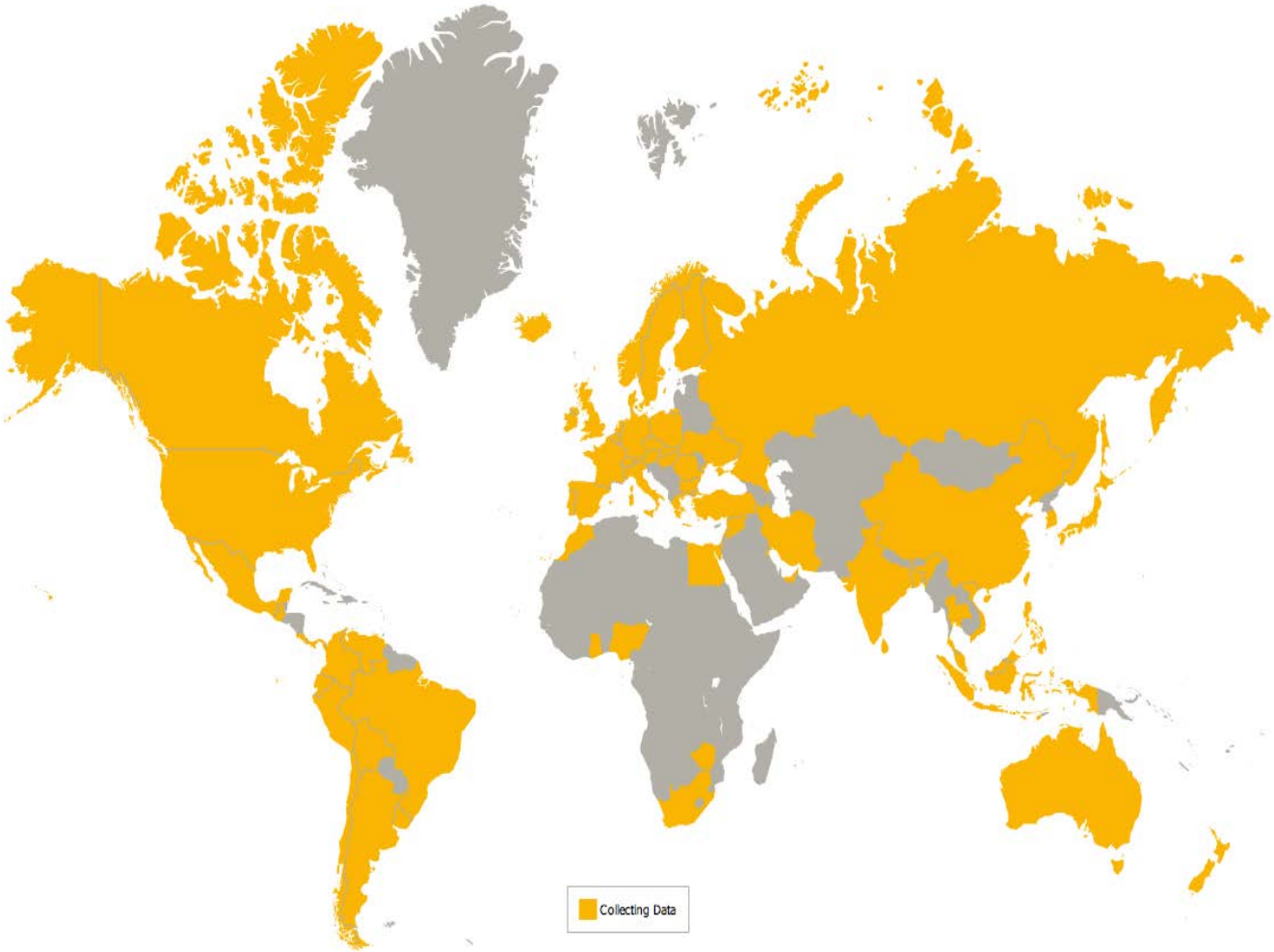
MIT MANAGEMENT SLOAN SCHOOL

Online Inflation Rates

Billion Prices Project

MIT MANAGEMENT SLOAN SCHOOL

Countries covered



MIT MANAGEMENT SLOAN SCHOOL

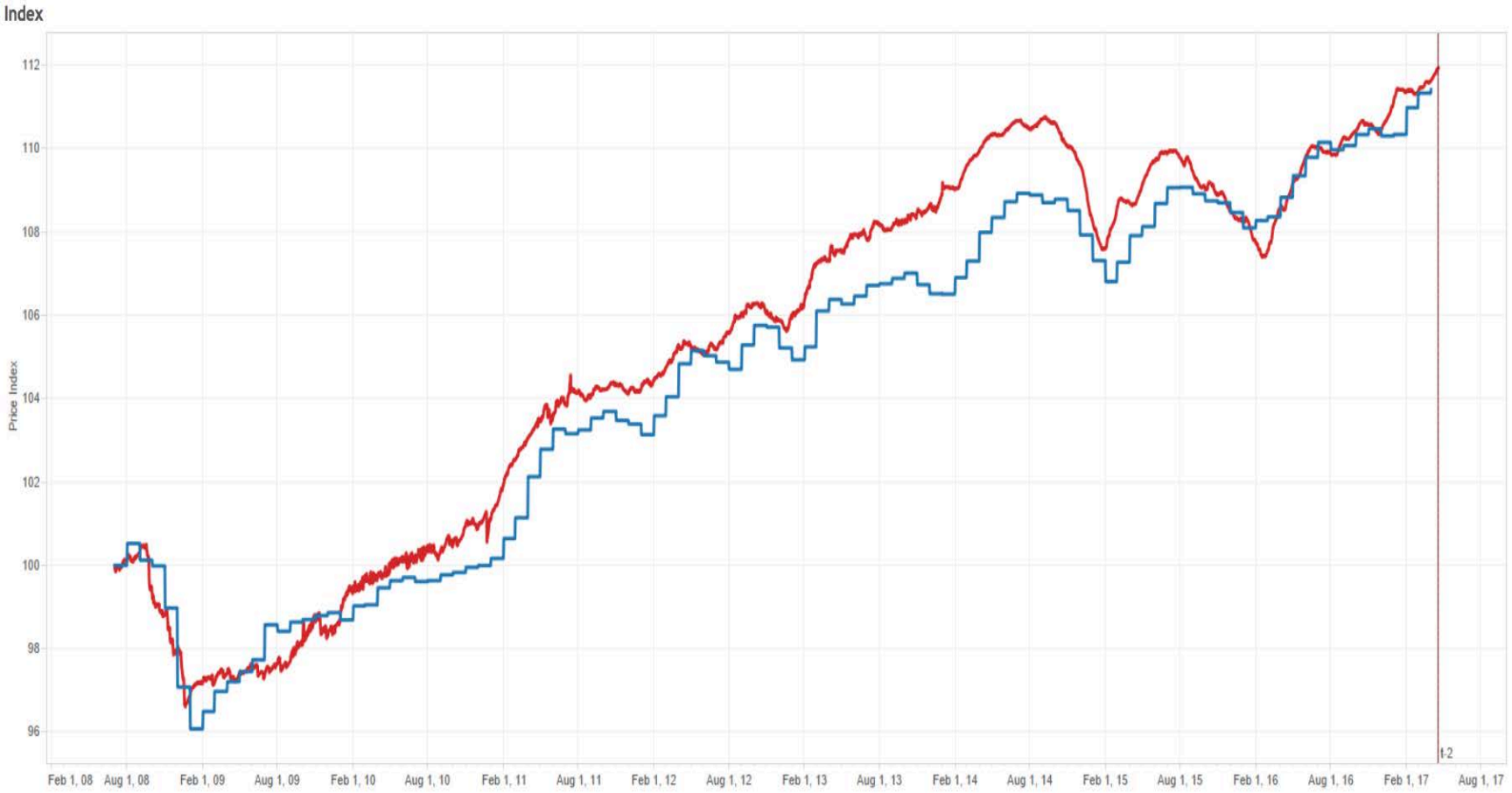
Billion Prices Project

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*

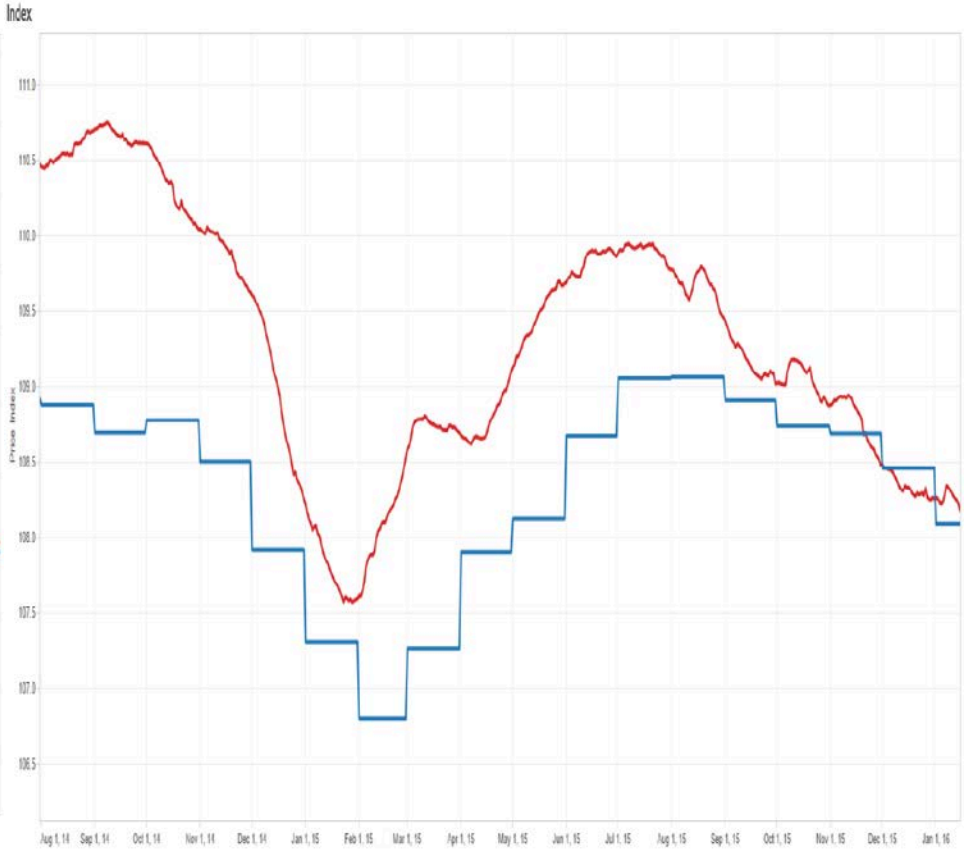
MIT MANAGEMENT SLOAN SCHOOL

USA



MIT MANAGEMENT SLOAN SCHOOL

USA: Anticipation



MIT MANAGEMENT SLOAN SCHOOL

Real Exchange Rates

Thousand BigMac Indexes

MIT MANAGEMENT SLOAN SCHOOL

Thousands Big Mac's Project

Compare prices for a bottle of Coke across countries

- 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: we are missing clothing, personal care, household products.
  - Cars we will never match

Two exchange rates

- E: Nominal Exchange Rate
  - Determined in financial markets
    - Uncovered and covered interest rate parity
    - Order Flows
- Eppp: Implied Exchange Rate
  - Computed from retailer's relative prices

MIT MANAGEMENT SLOAN SCHOOL

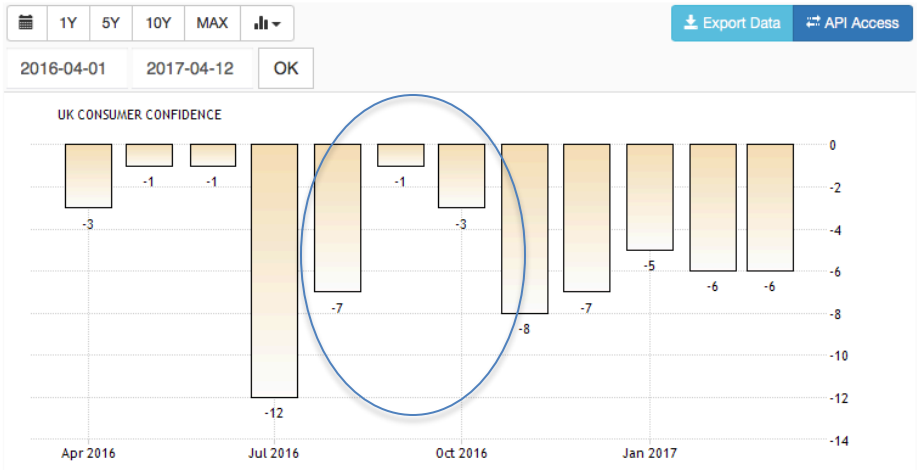
UK

E and Eppp
E and Eppp
Usdx
Eppp Adj
1.6
1.5
1.4
1.3
1.2
Dec 1, 14
Mar 1, 15
Jun 1, 15
Sep 1, 15
Dec 1, 15
Mar 1, 16
Jun 1, 16
Sep 1, 16
Dec 1, 16
Mar 1, 17

What can explain the divergence?

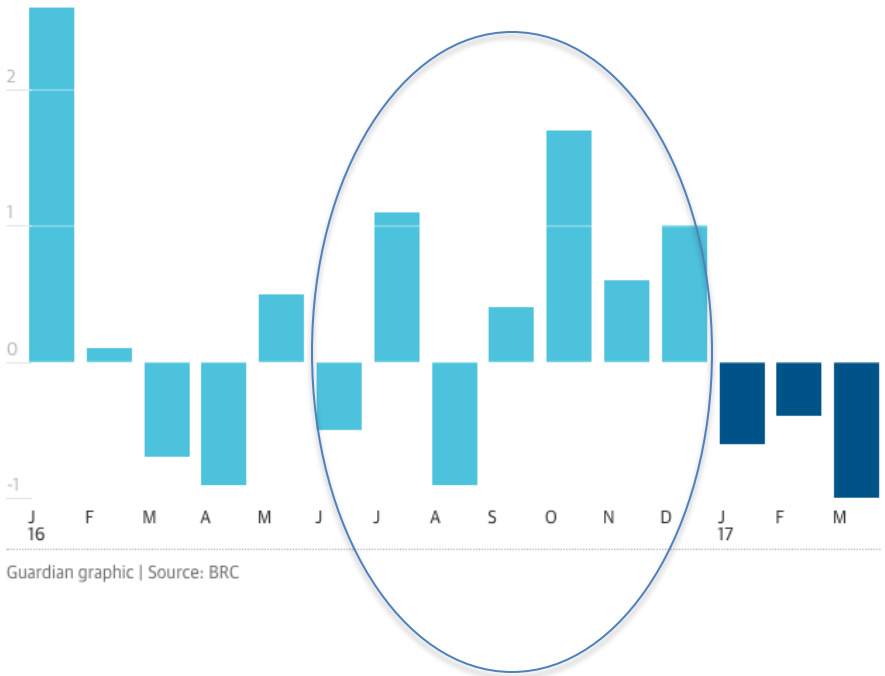
United Kingdom Consumer Confidence 1981-2017 | Data | Chart | Calendar

British consumer confidence stayed at -6 in March of 2017. Consensus expected -7. Confidence has remained in the red for 12 straight months. The index measuring changes in personal finances during the last 12 months increased by one point to +2. Meanwhile, the component of General Economic Situation during the last 12 months stayed at the same level (-21). Consumer Confidence in the United Kingdom averaged -8.96 from 1981 until 2017, reaching an all time high of 10 in June of 1987 and a record low of -39 in July of 2008.



Retail sales fell for the third month running in March

Monthly Retail Sales, % change year-on-year, like-for-like



Guardian graphic | Source: BRC

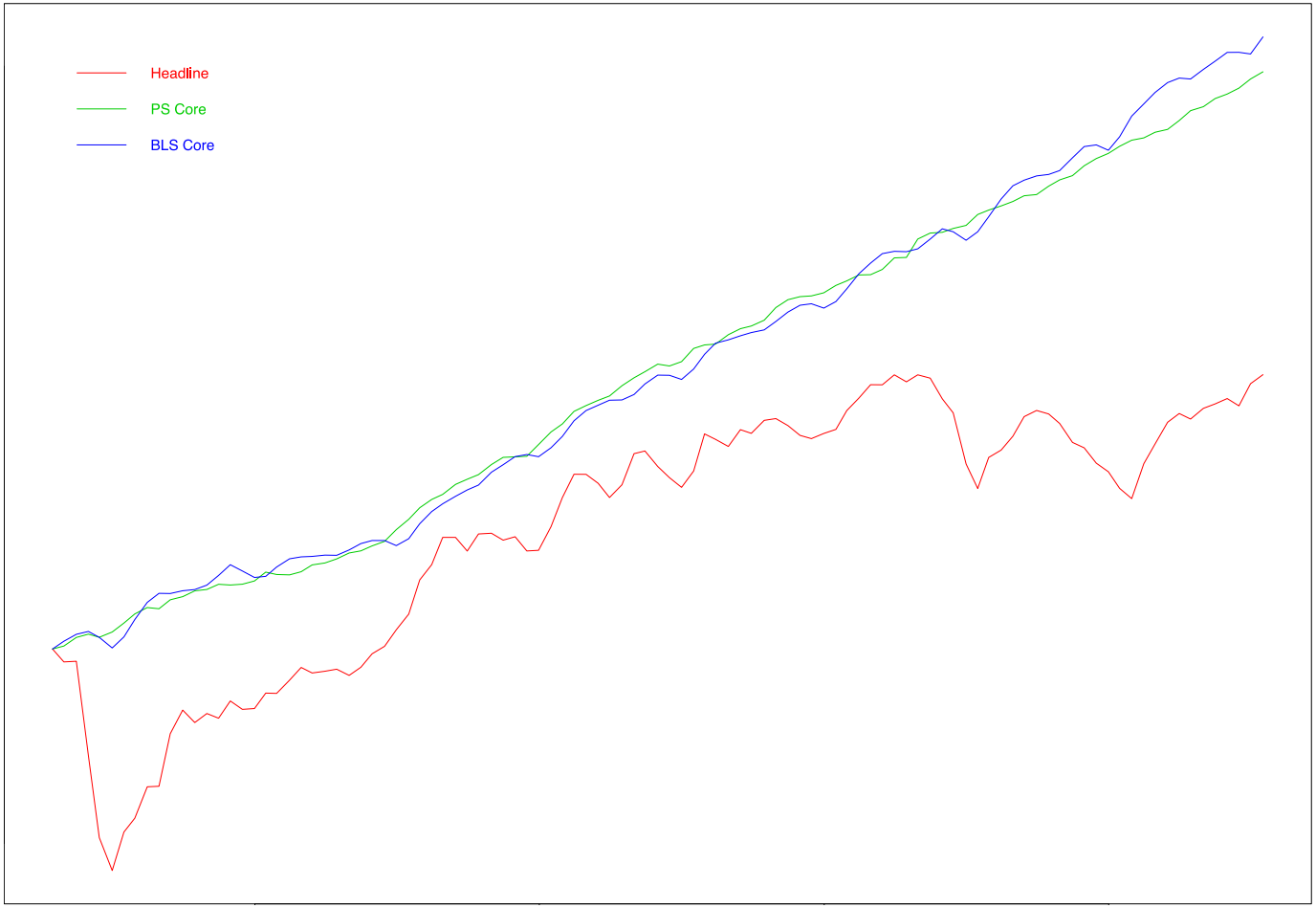
MIT MANAGEMENT SLOAN SCHOOL

Core

- Direct effect: exclusion procedure
  - Food, gasoline, taxes, etc. are part of the consumption basket.
  - The direct effect is eliminated by exclusion
- Indirect effect: pass-through procedure
  - Oil has an impact on gasoline, transportation, imported items, cost of energy, etc.
  - The indirect effect cannot be computed by exclusion procedures

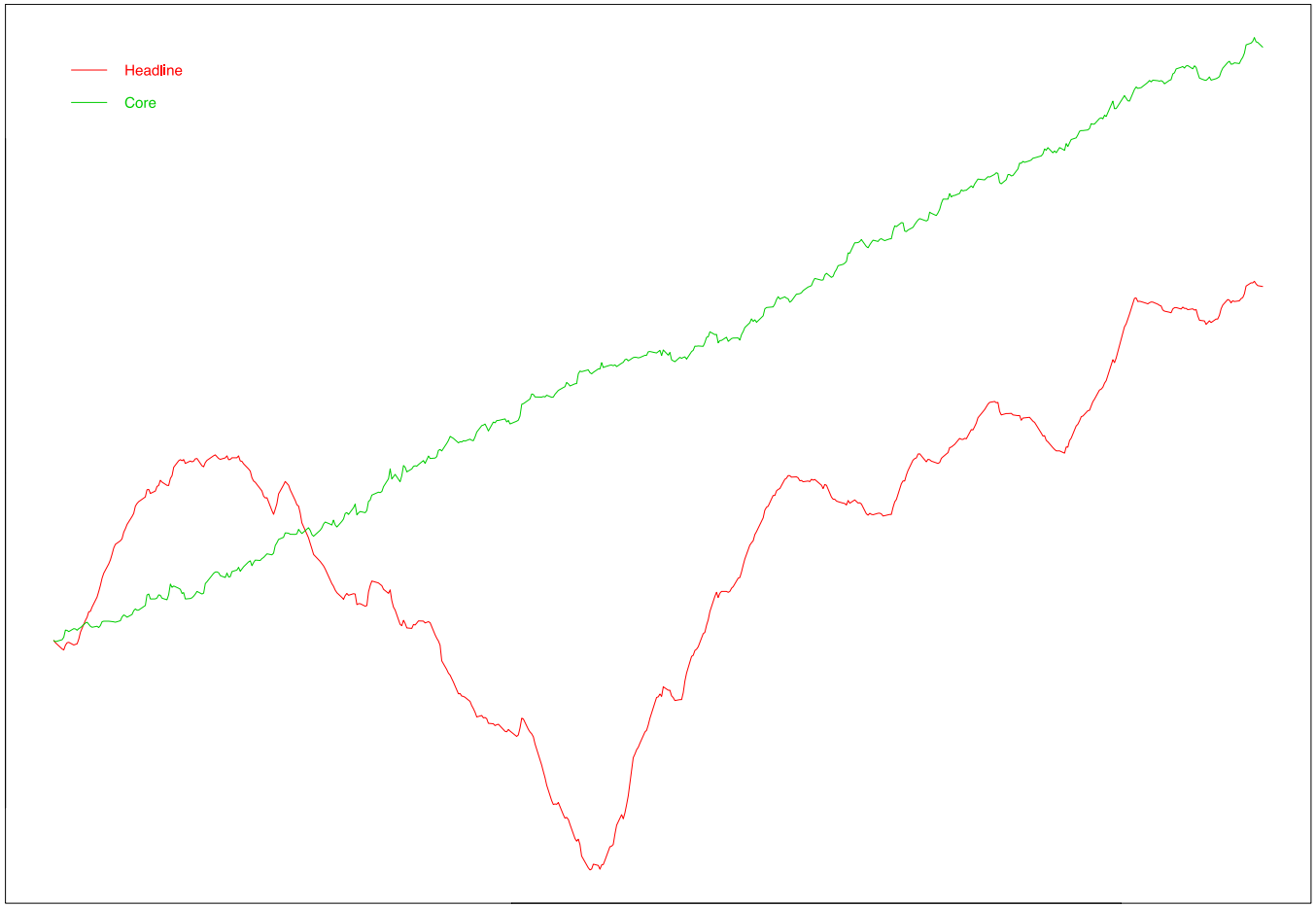
MIT MANAGEMENT SLOAN SCHOOL

US Core in the Long Run



MIT MANAGEMENT SLOAN SCHOOL

US Core: Where are we now?



MIT MANAGEMENT SLOAN SCHOOL

Possibilities

- New technologies allow us to gather data differently
  - Need to understand the mapping between the data and the information
    - More data is NOT always better
    - Understand the weaknesses in the data
- Working on more ambitious projects
  - Housing Inflation and Bubbles: USA
  - Labor Market Conditions: USA and Colombia
  - GDP: In Sao Paolo
  - Household Stress: España and Mexico