International Price Comparisons: Lessons from Scanner Data

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I. The Data

II. The Challenges: The Four R’s
   1. The Right Product
   2. The Right Weight
   3. The Right Price (Retailer)
   4. The Right Variety

III. The Innovation: Distribution
I. The Data

- Scanner data (Nielsen)
- Price, quantity, product info, retailer info.
- Qatar, UAE, Oman, Kuwait, Jordan, Bahrain (but also China, 7 CEE countries, US, Canada).
- 30 product categories, fast moving consumer goods (FMCGs)
- 2006-2012
- Monthly or bi-monthly freq., some weekly also available
- Across thousands of outlet
- Data available at the store level.
- Data on promotions also available.
- Costs more than $1 m (at bargain prices)
II. Challenge R1: The Right Product

The Issue:
- Cannot price all items.
- Need to pick a subset.
- Is it a problem? NO
- ...as long as we have the right subset.
- Need expenditure, only available in scanner data.

The Solution:
⇒ We ask the cities/countries

Lessons from scanner data

Figure 1: Product Market Share

Product Selection
Good choice
Bad choice

Figure 2: Cumulative Market Share
II. Challenge R2: The Right Weight

The Issue:

➤ Suppose product

➤ How to account for the fact that some products are more important than others?

➤ Ask cities/ countries to identify importance with *.

The Solution:

⇒ Weigh the data: 2:1? 3:1?

Lessons from scanner data

Figure 1: Product Market Share

Weight Selection
(P1, w1)
(P2, w2)

Figure 2: A Numerical Illustration*

\[ w_1 = 0.15 \]
\[ w_2 = 0.001 \]
\[ \Rightarrow \frac{w_1}{w_2} = 150 \]

* UAE, Dishwash
II. Challenge R3: The Right Price (Retailer)

The Issue:
- Suppose product ✔
- Suppose weight ✔
- Heterogeneous retailers charge different prices.
- Which retailer to audit?

The Solution:
⇒ Audit multiple

Lessons from scanner data

Figure 1: Price vs retailer market share
- Products are cheaper in large retailers
- Beans, Blades, Bouillon, Cereals, Cheese, Chewing gum, Chocolate, Dishwash

Figure 2: Price Selection
- Bad choice
- Good choice
- Retailer size
II. Challenge R4: The Right Variety

The Issue:
- Suppose product
- Suppose weight
- Suppose price
- Multiple items within the store fit PPP product defn.

The Solution:
⇒ Random?
III. The Innovation: Distribution

The Issue:

- Currently, in BLS, ICP, etc., several stores are audited.
- But only the average price across these stores is used.
- Ignores info on distribution: how many of the audited stores carry an item.

My advice:

- Use distribution as weight
- Because there is one-to-one mapping between distribution and market share, it provides an easy to obtain (and already collected) proxy for unobserved expenditure!
THANK YOU
II. Challenge R3: The Right Price (Retailer)

Products are cheaper in large retailers

- Beans
- Blades
- Boullion
- Cereals
- Cheese
- Chewing gum
- Chocolate
- Dishwash
II. Challenge R4: The Right Variety

PPP definition: Colgate, 80ml (50-100) classic, total, non-whitening, tube.
II. Challenge R4: The Right Variety

PPP definition: Detergent, powder, washing machine, WKB, 3kg (2-5kg).