Specific Trade Costs, Quality and Import Prices

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1 The views expressed in this presentation are solely those of the author and not necessarily those of the U.S. Bureau of Economic Analysis or the U.S. Department of Commerce.
Motivation

- Quality differences essential feature of recent theoretical and empirical trade literature.
- Few items in import/export price indices quality adjusted.
- Many newly/intermittently traded goods.
  - Inherently difficult to price.
- **Question** Does unmeasured quality lead to mismeasurement of import price indices?
Examine two techniques used by statistical agencies.

Sampling techniques drop intermittently traded goods:
- Want consistently traded goods.
- Majority of sampled prices dropped.

Matched modeling:
- Attribute price differences of similar goods to quality.
Results Summary

- Theory:
  - Matched modeling overestimates quality of new goods.
  - Price sample of consistently traded goods underestimate price changes.

- Empirics:
  - Matched modeling effect:
    - Declining in overall impact.
    - Concern for differentiated goods from developing countries.
  - Sampling effect may be increasing in importance.
Based on Baldwin & Harrigan (2011).

Key model ingredients:

- Higher quality goods higher cost but higher profit.
- Unit cost labor cost $a$ produces a good of quality $q$:
  - $q(i) = a(i)^{1+\theta}$.
  - $\theta > 0$: Profit increases in marginal cost.

Trade costs:

- Specific (per-unit) trade costs: $F^sw_o$.  
- Fixed cost $F^fw_o$ to enter market. 
- ad valorem cost $\tau$. 

Matched modeling assumes price proportional to quality.

Specific trade costs weaken link between *mill* price and quality.

\[ p_{od}(i) = \frac{w_o}{\sigma-1} [a(i)\sigma + \frac{F^s_{od}(i)}{1+\tau_{od}(i)}] \]

Price: Markup over...

1. Production cost: Correlated with quality.
2. Trade costs: Not correlated with quality.

Low quality goods’ price “too high.”

Price ratios overstate quality of low quality goods.

- Overstate real imports of new goods.
Sampling assumes price changes of sampled goods same as non-sampled.

New/intermitent goods tend to be low quality.
  - Low quality $\rightarrow$ low profit.
  - Small cost changes can change entry/exit decision.

Cost shocks change low quality goods’ prices more.
  - More of price due to trade costs.
Empirical Analysis

- Data: U.S. imports by country/5 digit SITC code, 1974-2004 (Hummels 2007).
  - *Not* data used in import price index.
  - Very aggregated, but publicly available.
- Price: Unit value.
- Specific cost: Freight charge.
- *ad valorem* cost: Tariffs.
Empirics: Matched Models

- With value of $\sigma$, can back out quality ratio between goods.
- Example: Leather footwear from Switzerland and Sri Lanka.
  - Top ten import.
  - Differentiated product.
  - Top/bottom unit values.
- $\sigma = 2.02$, from Broda & Weinstein (2006).
- Aggregate impact:
  - Falling freight (specific) costs $\rightarrow$ declining in overall impact.
  - May impact differentiated goods from developing countries.
Empirics: Sampling

- New goods have lower unit cost.
- Impact of trade cost changes proportional to price.
  - Model: New goods price twice as sensitive.
- Dropping intermittent goods understates price movements.
How important are these effects?

- Initial findings:
- Matched modeling:
  - Less important over time: Freight rates falling.
  - For some goods: More air freight, more low income sources.
- Sampling:
  - More important over time: More new goods, bigger price gaps.
- More work with more disaggregated data needed.