Accounting for Intermediates: Production Sharing and Trade in Value Added

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Basic Motivation – Obvious to ITI Crowd

- Vietnam exports a $99 bicycle to China
- China paints it using $1 labor and exports $100 to the U.S.
- (Gross) Trade statistics suggest no economic relationship for the U.S./Vietnam and a $100 one for U.S./China.
- In fact, we might want to think about Vietnam exporting far more value added to U.S. than China...
Basic Idea Behind Calculation

Production $y$ equals final goods: $c$

+ inputs used to produce them: $Ac$
+ inputs used to produce these inputs: $A^2c$
+ inputs used to produce those inputs: $A^3c$

$y = (I - A)^{-1}c$
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Assessment

- A very nice paper
  - Dormant theory
  - GTAP (Purdue) global I/O data
  - Well written, intuitive, believable results

- Relative to I/O literature, some non-standard improvements
  - Export-processing zones in Mexico/China
  - Analyses of cross-country variation

- Standard I/O critiques apply
  - Fixed coefficient technologies
  - Representativeness assumptions
  - etc.
But the More Exciting Part is How to Use this Tool?

- Multilateral Results are very similar to HIY (2001)

- So, benefit comes from new Bilateral relationships
  - Exchange Rate Passthrough
  - Gravity
  - Trade Routes
  - Co-Movement / Contagion
  - Jones’ (2009) input multiplier
  - Bilateral Trade Balances
  - Time Series – Tests of Yi
Value-Added FX Passthrough (Multilateral)

- Standard Passthrough (Campa and Goldberg, 2005):
  \[ \ln \Delta p_{i,t} = \alpha_i + \beta_i \ln \Delta e_{i,t} + \text{controls} + \text{lags} + \text{etc.} \]

- \( e_{i,t} \) is the \textbf{gross trade-weighted exchange rate}. But, we \textit{should} use \textbf{value-added trade-weighted exchange rate}:
Value-Added FX Passthrough (Bilateral)

- Bilateral Passthrough (Gopinath et al., 2010, Neiman, 2010):

\[
\ln \Delta p_{ni,t} = \alpha_i + \beta_{ni} \ln \Delta e_{ni,t} + \text{controls} + \text{lags} + \text{etc}.
\]

- Literature explains $\beta_{ni} \neq \beta_{ki}$ with variable markups, but $VAX_{ni} \neq VAX_{ki}$ also $\implies \beta_{ni} \neq \beta_{ki}$
Value-Added vs. Standard Gravity

- Can we learn about what is generating gravity? (Anderson, 1979; Evenett and Keller, 2002)

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Ln(Gross Trade)</th>
<th>Ln(Value Added Trade)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ln(Distance)</td>
<td>-1.071***</td>
<td>-0.775***</td>
</tr>
<tr>
<td>Border</td>
<td>0.829***</td>
<td>0.687***</td>
</tr>
<tr>
<td>Island</td>
<td>-0.372**</td>
<td>-0.199**</td>
</tr>
<tr>
<td>Legal System</td>
<td>0.116**</td>
<td>0.067**</td>
</tr>
<tr>
<td>Common Language</td>
<td>0.585***</td>
<td>0.360***</td>
</tr>
<tr>
<td>Colonial Relationship</td>
<td>0.645***</td>
<td>0.406***</td>
</tr>
</tbody>
</table>

Note: Other standards (FTA, Religion, etc.) included, but not shown

- No Zeros. But Helpman, Melitz, Rubinstein (2008) selection equation could be really interesting
Other Interesting Potential Next Steps

- Explore Trade "Routes"
  - Given endpoints, is route the same?
  - Clues as to impact of policy/MNCs/geography

- Replicate and Compare using Earlier/Later Data
  - Document Yi explanation about trade-cost elasticity

- Co-movement
  - Di Giovanni and Levchenko (2007), but much better data
Conclusion

- Nice job, clear exposition, cool data, useful tool
- Most interesting/important part will be putting it to good use