Bergin and Feenstra paper

- Issue of importance to Fed
- Sophisticated theoretical modeling
- Careful empirical research
The Secular Decline in Pass-through to U.S. Import Prices

Pass-through to Prices of Imported Core Goods*

Rolling regression with a fixed 10-year window. Gray bands represent 95% confidence interval.

* Excludes petroleum, computers, and semiconductors. The exchange rate is an index of the dollar's nominal value against the currencies of 35 countries, weighted by bilateral shares of U.S. non-oil imports.

Marazzi, Sheets, and Vigfusson et.al. (2005), “Exchange Rate Pass-through to U.S. Import Prices: Some New Evidence”
Declining Passthrough is Important

Implies changes in the dollar have had declining effect on

- U.S. consumer prices
- Real net exports
- U.S. economic activity
U.S. Non-oil Imports from China and Pass-through

Marazzi, Sheets, and Vigfusson et al. (2005), “Exchange Rate Pass-through to U.S. Import Prices: Some New Evidence”
Basic setup

- U.S. imports differentiated goods from Mexico and China

- What happens when dollar falls against Mexican peso while remaining fixed against Chinese RMB?
Sophisticated theoretical modeling
Sophisticated theoretical modeling

Tim Kehoe can do the heavy lifting
Skip to main theoretical results

Distinction between bilateral and multilateral exchange rate passthrough
Bilateral Passthrough (BP)

• Imports from Mexico

\[ \text{BP} = \frac{d \ln(e_x p_x)}{d \ln e_x} = 1 \frac{N_y}{(2(N_y + N_x) - 1)} > 0 \]

• Imports from China

\[ \frac{d \ln(\bar{e}_y p_y)}{d \ln e_x} = \frac{N_x}{(2N - 1)} > 0 \]
Multilateral Passthrough (MP)

\[ MP = \frac{d \ln P_M}{d \ln E_m} = \frac{\text{Mex.share} \times d \ln P_{\text{mex}} + \text{Chi.share} \times d \ln P_{\text{chi}}}{\text{Mex.share} \times d \ln E_{$/\text{mex}}}} = \frac{\text{Mex.share} \times d \ln E_{$/\text{mex}}}}{\text{Mex.share} \times d \ln E_{$/\text{mex}}} \]

- Mex.share = share of Mex imports in total U.S. imports
- BP = bilateral passthrough for Mexican imports
Multilateral Passthrough (MP)

\[ MP = \frac{d \ln P_M}{d \ln E_m} = \frac{\text{Mex.sh} \times d \ln P_{\text{mex}} + 0}{\text{Mex.sh} \times d \ln E_{\$/\text{mex}}} \]

\[ = \frac{\text{Mex.sh} \times BP \times d \ln E_{\$/\text{mex}}}{\text{Mex.sh} \times d \ln E_{\$/\text{mex}}} = BP \]

- When \( BP < 1 \) and \( d \ln P_{\text{chi}} = 0 \), \( MP < 1 \)
Multilateral Passthrough (MP)

\[
MP = \frac{d \ln P_M}{d \ln E_m} = \frac{\text{Mex.} \cdot \text{share} \times d \ln P_{\text{mex}} + \text{Chi.} \cdot \text{share} \times d \ln P_{\text{chi}}}{\text{Mex.} \cdot \text{share} \times d \ln E_{\$/\text{mex}}}
\]

\[
= \frac{\text{Mex.} \cdot \text{share} \times BP \times d \ln E_{\$/\text{mex}} + \text{Chi.} \cdot \text{share} \times d \ln P_{\text{chi}}}{\text{Mex.} \cdot \text{share} \times d \ln E_{\$/\text{mex}}}
\]

• When \( BP < 1 \) and \( d \ln P_{\text{chi}} > 0 \), \( MP \neq 1 \)
Multilateral Passthrough

\[
\frac{d \ln P_m}{d \ln E_m} = 1 - \frac{N_y}{\left(2\left(N_y + N_x\right) - 1\right)} \left(\frac{s_x - s_y}{s_x}\right) < 1 \quad \text{iff} \quad s_x > s_y
\]

- Sx: per-firm share of Mexico in US imports
- Sy: per-firm share of China in US imports
Multilateral Passthrough

\[
\frac{d \ln P_m}{d \ln E_m} = 1 - \frac{N_y}{\left(2(N_y + N_x) - 1\right)} \left(\frac{s_x - s_y}{s_x}\right) < 1 \quad \text{iff} \quad s_x > s_y
\]

- Sx: per-firm share of Mexico in US imports
- Sy: per-firm share of China in US imports

When dollar falls against peso, MP minimized when:
- Per-firm share of China in US imports is low, so that
- Overall China share in US imports is low, and thus
- Multilateral dollar falls by more
Quibbles about Sx, Sy

- Per-firm share of imports
  - Fuzzy concept
  - Data?

- Does per-firm share reflect bias in consumer preferences?

- Do Chinese firms suffer from anti-Chinese bias?
Another quibble: role of US producers


- Bergin-Feenstra model: U.S. firms don’t produce the imported good.

- Premise of Bergin-Feenstra paper: rise of China increases number of fixed-exchange-rate producers relative to floating-rate producers.
  - This reduces passthrough.
<table>
<thead>
<tr>
<th>Year</th>
<th>Imports/ U.S. GDP</th>
<th>Imports from China/ U.S. GDP</th>
<th>Other imports/ U.S. GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>7.5%</td>
<td>0.3%</td>
<td>7.3%</td>
</tr>
<tr>
<td>2006</td>
<td>11.8%</td>
<td>2.2%</td>
<td>9.6%</td>
</tr>
<tr>
<td></td>
<td>Diff. 4.3%</td>
<td>Diff. 1.9%</td>
<td>Diff. 2.3%</td>
</tr>
</tbody>
</table>

Note: imports exclude oil.
Final theoretical quibble

- Bergin-Feenstra model:
  - Nothing special about China except peg to dollar
  - China’s low cost and competitive threat irrelevant
Final theoretical quibble

- Bergin-Feenstra model:
  - Nothing special about China except peg to dollar
  - China’s low cost and competitive threat irrelevant

- Alternative scenario:
  - Heavy Chinese competition
  - ... restrain other foreign producers from raising prices when dollar moves against them
  - ...induces them to lower prices when dollar moves in their favor
  - Implies asymmetric passthrough, depending on whether dollar rising or falling
Empirical work

- Reasonable
- Carefully implemented
- Result that Chinese competition lowers passthrough is plausible
<table>
<thead>
<tr>
<th></th>
<th>FE-OLS</th>
<th>PMG</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Exchange rate</strong></td>
<td>0.400** (0.02)</td>
<td>0.400** (0.01)</td>
</tr>
<tr>
<td></td>
<td>0.416** (0.02)</td>
<td>0.430** (0.01)</td>
</tr>
<tr>
<td></td>
<td>0.448** (0.02)</td>
<td>0.427** (0.02)</td>
</tr>
<tr>
<td></td>
<td>0.480** (0.02)</td>
<td></td>
</tr>
<tr>
<td><strong>Export price</strong></td>
<td>0.337** (0.02)</td>
<td>0.195** (0.03)</td>
</tr>
<tr>
<td></td>
<td>0.328** (0.02)</td>
<td>0.206** (0.03)</td>
</tr>
<tr>
<td></td>
<td>0.330** (0.02)</td>
<td>0.212** (0.03)</td>
</tr>
<tr>
<td></td>
<td>0.324** (0.02)</td>
<td></td>
</tr>
<tr>
<td><strong>Share*exch rate</strong></td>
<td>0.025** (0.01)</td>
<td>-0.598** (0.13)</td>
</tr>
<tr>
<td></td>
<td>-0.401** (0.12)</td>
<td>-0.618** (0.15)</td>
</tr>
<tr>
<td></td>
<td>-0.945** (0.16)</td>
<td></td>
</tr>
<tr>
<td><strong>China share</strong></td>
<td>1.87** (0.55)</td>
<td>4.01** (0.68)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Import tariff</strong></td>
<td>-0.187 (0.12)</td>
<td>-0.159 (0.11)</td>
</tr>
<tr>
<td><strong>Share*time</strong></td>
<td>-0.017 (0.016)</td>
<td></td>
</tr>
<tr>
<td><em><em>Share</em>(1-share)</em>*</td>
<td>0.712** (0.17)</td>
<td></td>
</tr>
<tr>
<td><strong>Observations</strong></td>
<td>2,905 2,905 2,905</td>
<td>2,634 2,634 2,634</td>
</tr>
<tr>
<td><strong>R² or φ</strong></td>
<td>0.641 0.642 0.644</td>
<td>φ=-0.17** φ=-0.18** φ=-0.18**</td>
</tr>
</tbody>
</table>

Table 2A. Consumer goods, capital goods, autos and chemicals (Enduse 1-4)
Dependent variable: U.S. Import Price Inflation
(73 end-use categories, 1997-2002)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>China share</td>
<td>0.04</td>
</tr>
<tr>
<td>(S.E.)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>Change in China Share</td>
<td>-0.79**</td>
</tr>
<tr>
<td>(S.E.)</td>
<td>(0.38)</td>
</tr>
<tr>
<td>Lagged Import Price Inflation</td>
<td>0.38**</td>
</tr>
<tr>
<td>(S.E.)</td>
<td>(0.09)</td>
</tr>
</tbody>
</table>


**Significant at 5% level.
Can empirical work distinguish between different reasons for China’s effect on passthrough?

- Bergin-Feenstra:
  - Effect only from fixed peg to dollar

- Alternative model:
  - Reflects China’s competitive, low-cost position
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- Bergin-Feenstra:
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- Test 1 – add another explanatory variable:
  
  \[ \text{change in exchange rate} \times \text{import share of other countries with pegs to dollar} \]

  - If Bergin-Feenstra are right, coefficient on that variable should be same as coefficient on:

  \[ \text{change in exchange rate} \times \text{China import share} \]
Can empirical work distinguish between different reasons for China’s effect on passthrough?

- Bergin-Feenstra:
  - Effect only from fixed peg to dollar

- Alternative model:
  - Reflects China’s competitive, low-cost position

- Test 2: Take

\[
\text{[change in exchange rate]} \times \text{[China import share]}
\]

and separate into two different variables:
  - one for dollar appreciations
  - one for dollar depreciations

- Bergin-Feenstra: coefficient negative for both
- Alternative: coefficient 0 for appreciations, negative for depreciations
Conclusion

- Interesting, careful, rigorous paper
- Not the final word on China and passthrough
- Desirable extensions:
  - Role of U.S. producers
  - Role of China’s low-cost competitive effect