The Impact of Trade on Growth
Micro-Level Channels

Marc J. Melitz  Harvard University & NBER
What Are the Micro-Level Channels for Aggregate Growth?

Source: Misallocation and Manufacturing TFP in China and India by Hsieh & Klenow, Quarterly Journal of Economics (2009)
India: ASI plant census 1987-1995
What Are the Micro-Level Channels for Aggregate Growth?

1. Rightward shift of the productivity distribution
2. Change in shape of distribution
3. Correlation with distribution of market shares increases

Hsieh & Klenow (2009) document how differences in channel 3 alone account for 40-60% of the aggregate productivity difference between India and the US.
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- In this talk, will focus on effects driven by trade
Understanding Micro-Level Channels: Key Modeling Ingredients

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   - Hard to duplicate projects without re-introducing uncertainty
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3. Important re-allocations across projects occur within the boundaries of the firm (and within plants too)
Uncertainty Regarding Future Productivity/Profitability

- Reflected in key effect of globalization on entry: Better export opportunities induce investments in new projects (firms/plants/products/technologies/foreign investments)
- This is response to potential for higher profits from a positive resolution of uncertainty
Uncertainty Regarding Future Productivity/Profitability

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- This is response to potential for higher profits from a positive resolution of uncertainty
- Widespread empirical evidence for this uncertainty is exhibited in patterns of firm/plant/product entry
  - To a lesser extent there is also uncertainty for each specific export market & product combination
Costly Segmented International Markets

- Exporting is only profitable for the higher productivity projects
  - ... and for those: provides “release” from diminishing returns in domestic market
- Market shares shift towards more productive projects (within and across firms): aggregate productivity \( \uparrow \)
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- Lower export and import barriers both hurt lower productivity projects:
  - Lower export barriers: increased entry into domestic market
  - Lower import barriers: import competition (without “release” provided by exporting)
  - Many low productivity projects are dropped: aggregate productivity ↑
Firm Export and Innovation Decisions

- Empirical evidence from many countries highlights how export and innovation/technology adoption decisions are linked
- Increased scale from exporting increases returns to innovation  
  ... and vice-versa: innovation lowers export market threshold
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- Export-Innovation link radically changes evidence for “learning-by-exporting”
- (Increases in range of imported intermediate inputs also leads to firm-level productivity increases)

The Effects of the FTA on overall Canadian Manufacturing Productivity
Within- and Between-Plant decomposition

<table>
<thead>
<tr>
<th>Selection/Reallocation (Between Plants)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth of exporters (most-productive plants)</td>
<td>4.1%</td>
</tr>
<tr>
<td>Exit of least-productive plants</td>
<td>4.3%</td>
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</tbody>
</table>

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<tr>
<th>Within-Plant Growth</th>
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<tbody>
<tr>
<td>New exporters invest in raising productivity</td>
<td>3.5%</td>
</tr>
<tr>
<td>Existing exporters invest in raising productivity</td>
<td>1.4%</td>
</tr>
<tr>
<td>Improved access to U.S. intermediate inputs</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

Total

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Evidence for Canada: Heterogeneous Innovation Response
Entry Rates and Labour Productivity Gains

- New exporters as a share of pre-FTA non-exporters
- ‘Raw’ productivity gains from starting to export.

`Quintiles’ of the 1988 Distributions of Labor Productivity and Size
Re-allocations Across Product Line Within Firms

- Exports are dominated by large multi-product firms
  - Entry/exit/export decisions for products occur within firms

- Effects of NAFTA for Canadian, Mexican, and US firms
  - Decrease in range of products produced (worse performing products are dropped)
  - Increased skewness across product line for both production and exports

- Better access to imported intermediate inputs linked to introduction of new products by Indian firms
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Competition and Firm-Level Productivity

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- ... then multi-product firms respond by skewing production and exports towards their best performing products (those with the highest market shares)
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- Ongoing research: effect on firm productivity
Effects of Export Market GDP and Geography on Skewness