Outline & Apologies

1. Many things in paper we don’t have time to present
   General apology for ‘sins of omission’

2. Outline: ‘Global Supply Chain (GSC) disruptions’
   - Links that make up GSCs
   - Shocks that disrupt GSCs
   - Policies that mitigate GSC disruptions
LINKS:
Conceptual background
Business v Economic Approaches

**Business view (chain)**

- Buy
- Make
- Sell

**Economics view (matrix)**

- Raw materials
- Primary factors (labour, capital, etc)
- Final use

Single firms

All firms
What tools do we need to measure links?

1990s vibe: Global Value Chain (GVC) = links are productive
• Wanted to measure “where is the work was actually done?”
• Focus on ‘value added trade’ → measures like “Backward Linkages”

2020s vibe: GSC = links are vulnerable
• Want to measure “who is sending what to whom?”
• Focus on ‘gross trade’

• In 2021/22, we developed new measures based on gross trade
  – OECD will include them in their 2023 database update
Two types of gross trade measures

1. “Face Value” basis:
Intermediates purchased from tier-1 suppliers
(data)

2. “Look Through” basis:
All intermediates purchased directly & indirectly via suppliers’ purchases from other suppliers
(calculated)

Example
LINKS:
Basic facts:
Face value basis
Supply chain exposure varies widely by US sector & by type of input.

2018 (latest year)
Foreign exposure is most important for manufactured inputs 2018 (face value)
LINKS:
Basic facts: 
*Look through basis*
## Share of look-through manufactured inputs by sector & country 2018

1. US is the main supplier to the US, 88% on average.
2. China is the top foreign supplier – but not dominant, 3.5% of 12%

<table>
<thead>
<tr>
<th>Supplier:</th>
<th>All sector average</th>
</tr>
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<tbody>
<tr>
<td>US</td>
<td>88%</td>
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<tr>
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<td>China</td>
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<th>Supplier:</th>
<th>Vehicles</th>
<th>Mach nec</th>
<th>Basic Metals</th>
<th>Elec. &amp; Optic. Eq.</th>
<th>Oth. Trans eq</th>
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<tr>
<td>US</td>
<td>78%</td>
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<tr>
<td>All foreign</td>
<td>22%</td>
<td>17%</td>
<td>16%</td>
<td>16%</td>
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<tr>
<td>China</td>
<td>5.1%</td>
<td>4.9%</td>
<td>2.9%</td>
<td>5.5%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Canada</td>
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<td>1.4%</td>
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<tr>
<td>Mexico</td>
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<td>1.8%</td>
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LINKS:
Hidden exposure, Take 1
Look-through vs face-value exposure
Who is the top US supplier?

% of the manufacturing sectors
US look-through exposure to China is 3.8 times higher than its face-value exposure.
LINKS:
Hidden exposure, Take 2

Rapid, geographic concentration of sourcing
Exposure to China rose rapidly.

Top supplier, % of the 17 manufacturing sectors
China’s production of manufactured intermediates rose rapidly & is now dominant.
China less dominant overall

China has a revealed comparative advantage in intermediates
SHOCKS: Organizing framework
3 sources of shocks & 2 types

• Supply, Demand, vs Connectivity (not mutually exclusive & contagious)
• Idiosyncratic vs Systemic (line in sand)

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<th>Table 3.1: Taxonomy of sources and nature of shocks, with examples.</th>
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<td>Idiosyncratic (isolated, simple)</td>
</tr>
<tr>
<td>Systemic (multi-sector, multi-market, complex interactions)</td>
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Source: Authors’ elaboration.
POLICY:
Organizing framework, not empirical work
When is policy justified?
*(given that firms are optimizing on supply chain risk)*

What goes into the wedge?

Analogies from:

- ‘Farms & Arms’,
- Financial Sector,
- Example: Strategic Petroleum Reserve
Take away?
• Foreign supply chain exposure: Bigger but not that big.
• It’s bigger than common measures suggest, but only 12% on average across US manufacturing sectors.

Thank you for listening

Clearly, MUCH more theoretical & empirical research is needed on links, shocks & policy
Slides for Q&A
Concentration of face Value exposure

Using HS10 trade data (face value)
International comparisons

• China is more exposed overall but less exposed to imported intermediates
• And its foreign exposure is declining

Figure 2.9: Major manufacturers’ exposure to supply chains, 1995-2018

Source: Authors’ calculations based on OECD 2021 ICIO tables. Notes: The left panel shows manufacturing intermediate inputs as a share of manufacturing gross output. The right panel shows the imported manufacturing intermediates as a share of manufacturing gross output.
US v China comparisons

• China is more exposed overall but less exposed to imported intermediates
• And its foreign exposure is declining

Source: Authors’ calculations based on OECD 2021 ICIO tables. Notes: This figure shows total (i.e. domestic and foreign) and imported (i.e. foreign) manufacturing intermediate inputs on a face value basis (as % of a sector’s gross output). The blue dots in the United States panel are repeated from Figure 2.1.
China’s hidden exposure is to Korea.

Figure 2.11: Top foreign supplier of industrial inputs to Chinese manufacturing sectors, 1995 versus 2018

Source: Authors’ elaboration based on 2021 OECD ICIO tables. Notes: This figure shows the share of Chinese manufacturing sectors for which the top supplier is Japan, Korea, USA, Taiwan or Other. FPEM stands for Foreign Production Exposure: Import Side (See Baldwin, Freeman, and Theodorakopoulos 2022).
Sources of future shocks

WEF survey-based gauge

Figure 3.1: WEF’s Global Value Chain Barometer (Aug. 2021 = 100), 2021-2023

Source: WEF 2021 (data provided to authors upon request). Note: Values indexed to 100 in August 2021.