Understanding supply chains in the Indo-Pacific region

Ari Van Assche
Renewed policy focus on global value chains

“What me want to know is: What are the implications of supply-chain crisis for cookie?”
Today’s plan

- Asia’s growing role in global value chains
- Orchestrating global value chains
- Weaponizing global value chains
- Quo vadis?
Where the parts of an iPhone 6s come from

**LTE Modem**
- **China (Qualcomm)**
  - Connects your iPhone to your carrier's LTE network

**Battery**
- **China (Huapu Technology)**

**WiFi Module**
- **China (Universal Scientific Industrial)**

**Radio frequency transceiver**
- **China (Qualcomm)**
  - Sends and receives radio signals for calls and data.

**Storage**
- **Japan (Toshiba)**
  - Where the iPhone stores iOS, apps, music, photos, and videos

**Camera**
- **Japan (Sony)**

**Display**
- **Japan (Asahi)**

**RAM**
- **Korea (Samsung)**
  - The short term memory where your iPhone stores your most recently used apps so you can open them faster

**Chassis**
- **China**
  - The iPhone's body

**A9 processor**
- **Korea (Samsung) Taiwan (TSMC)**
  - Runs iOS and your apps

**Rare minerals**
- **California, China**
  - For multiple parts, like colors for screen, phone circuitry, speakers, vibration unit

**Sources**: Ifixit, CNET
### Economic upgrading

<table>
<thead>
<tr>
<th>iPhone 3G (2009)</th>
<th>iPhone X (2018)</th>
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<tbody>
<tr>
<td>• Assembly (Foxconn)</td>
<td>• Assembly (Foxconn)</td>
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<tr>
<td>Total value added: $6.5, 3.6% of the bill of materials.</td>
<td>Functional parts for touchscreen module (Anjie Technology)</td>
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<td>Filter for 3D sensing module (Crystal Optech)</td>
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<td>Coil module for wireless charging (Lushare Precision)</td>
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<td>Printed circuit board (M-Flex)</td>
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<td>Speakers (Goertek)</td>
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<td>RF antenna (Shenzhen Sunway)</td>
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<td>Battery pack (Sunwada)</td>
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<td>Glass cover (Lens Technology)</td>
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<td>Stainless frame (Kersen Technology)</td>
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<td>Camera module (O-Filem)</td>
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<td>Total value added: $104, 25.4% of the bill of materials.</td>
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Xing (2019)
GVC income derived from North American electronics demand

Source: OECD TIVA
GVC income derived from global electronics demand

Source: OECD TIVA
Evolution of the earth’s economic center of gravity

*Calculated by weighting national GDP by each nation’s geographic center of gravity; a line drawn from the center of the earth through the economic center of gravity locates it on the earth’s surface. For detailed analysis, see the appendix in the McKinsey Global Institute (MGI) report Urban world: Cities and the rise of the consuming class. Source: MGI analysis using data from Angus Maddison, University of Groningen; MGI Cityscope v2.0.
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Orchestrating global value chains

• Positioned at the top of a hierarchical chain, lead firms have the muscle to select which suppliers are included or excluded in GVCs, to determine the terms of supply-chain membership, and to allocate where, when, and by whom value is added.
Porter’s value chain

Source: Porter (1985)
Smile of value creation

Source: Mudambi (2008)
“Batteries containing cobalt reduce overheating in electric cars and extend their range, but the metal has become known as “the blood diamond of batteries” because of its high price and the perilous conditions in Congo, the largest producer of cobalt in the world. As a result, carmakers concerned about consumer blowback are rapidly moving to find alternatives to the element in electric vehicles, and they are increasingly looking to other nations with smaller reserves as possible suppliers.”
Figure 1. Traditional model of code of conduct or compliance.
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Harnessing the power of global value chains

• Governments can push their own economic and non-economic objectives by harnessing the power of lead firms – pushing them to reconfigure their GVCs.
“Any goods, wares, articles, and merchandise mined, produced, or manufactured wholly or in part” in the XUAR should be assumed to be the product of forced labor unless proven otherwise by “clear and convincing evidence.”
Inflation Reduction Act

• Provides federal tax credits of up to US$7,500 to electrical vehicles that are classified as North American in terms of manufacturing and parts.

• “One South Korean official called the legislation a “betrayal” and suggested that it could damage cooperation in other areas of the relationship.”
US Chips and Science Act

- Any semiconductor company that receives federal financial assistance cannot conduct any significant transactions that materially expands China’s semiconductor manufacturing capacity for ten years.
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Toward a fracturing of the global trading system?