MIT INDUSTRIAL PERFORMANCE CENTER

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Measuring Global Value Chains

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Panel: GVC Measurement Methodology: Challenges and Prospects
Day 3, May 7: 10:00 - 11:15

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Innovation Policy Forum

Innovation, Global Value Chains, and Globalization Measurement
May 5-7, 2021, Via Zoom

Shifting modes of international engagement and policy

- Trade (from antiquity, from Silk Road to Wool for Wine)
  - Imports
  - Exports

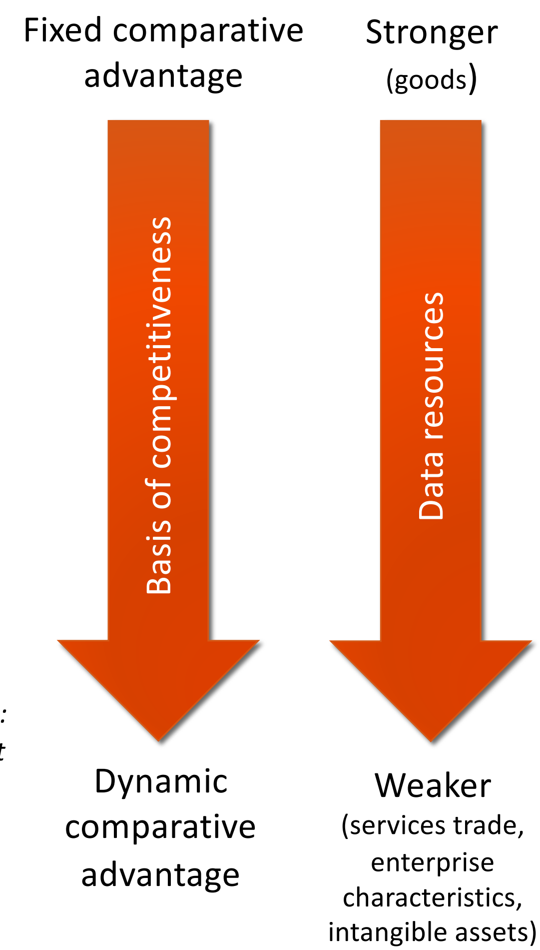
  Comparative advantage based on natural endowments

- FDI (from early 20th Century – e.g. Ford Model T)
  - Inward
  - Outward

  *Local content requirements are put in place accelerate **spillovers** in local markets*

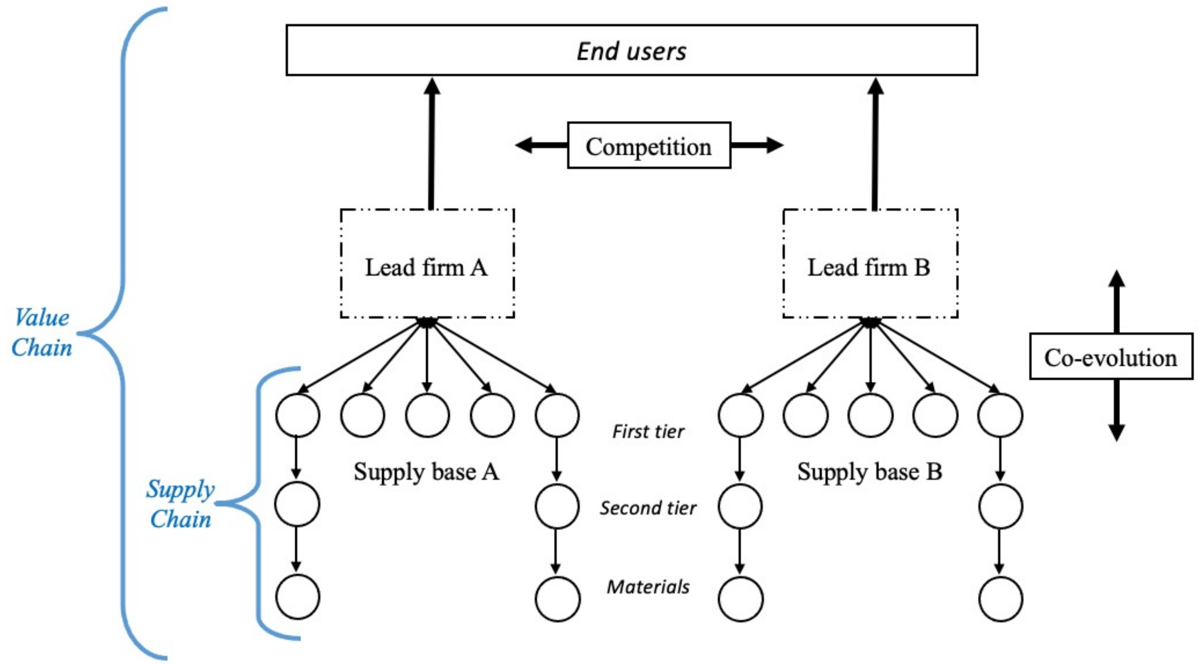
- Global Value Chains (from late 1980s, especially after 2001)
  - Vertical specialization in trade
    (business functions, intermediate and final products)
  - Vertical specialization in FDI
    (lead firms, suppliers, and service providers)
  - Trade in services
    (software and other ICT-enabled services, e.g. BPO)
  - Knowledge and innovation networks
    (global fragmentation of R&D) – Gumpert et al paper

  *Fewer simple tools for industrial policy: growing complexity means policy must be more **adaptive***



Global Value Chains: some definitions and concepts

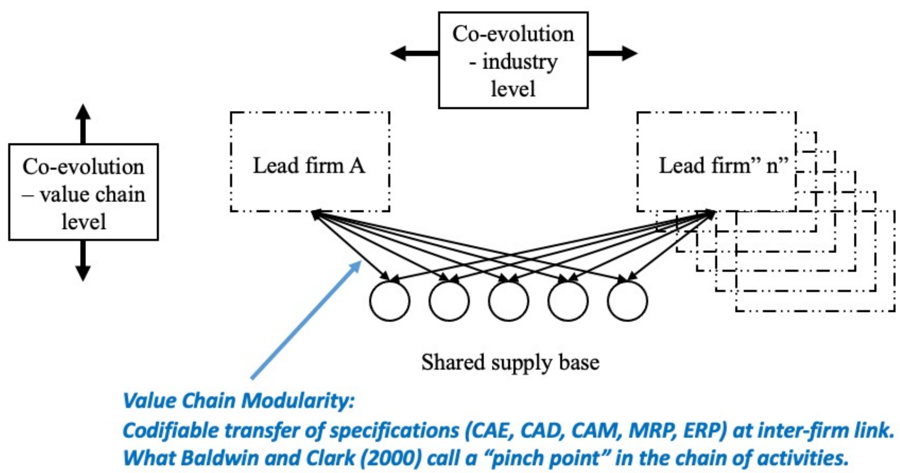
- Value chains vs. supply chains – value chains include 'lead firms' as key actors
  - Lead firms "lead" in the sense of initiating the activities of the supply chain
  - Lead firms (and specific products) have supply-chains
  - Lead firms have "buyer power": they usually select suppliers, and this defines supply chains
  - Lead firms add value of their own, especially in regard to R&D and innovation
  - Lead firms commonly capture the lion's share of rents

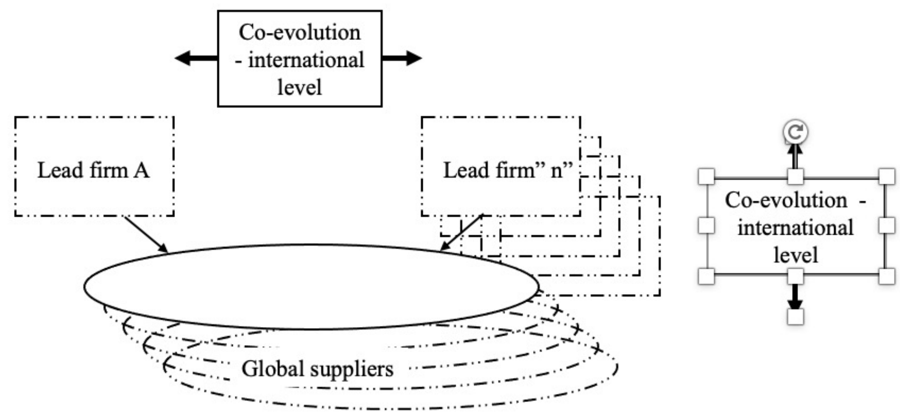


- An oddity common in supply chain and management literatures:
  - focus on lead firm strategy, not value addition
  - focus on supplier value addition, not strategy

Global Value Chains: stylized narrative

- From outsourcing to outsourcing *and* offshoring





1990s:

- Lead firms aggressively outsource non-core functions, including manufacturing
- Suppliers gain assets, scale, and capabilities
- ICT and business process standardization eases plug-and play outsourcing creating external economies of scale and scope
- Co-evolution and learning scale to the value chain and industry levels

2000s:

- Lead firms dramatically increase FDI and international sourcing
- Suppliers follow, become "global suppliers'
- Consolidation leads to MNC at all levels of the value chain
- Co-evolution and learning scale to the international level

What is a GVC?

1. Longer production chains that cross more than one border
   - Trade in value added estimates (e.g., TiVA – OECD/WTO, WIOD, GTAP, EORA, etc.)

2. Products where key transactions require “explicit coordination” between parties
   - Proxied by final and *specified* intermediate trade flows in complex assembly industries with long supply chains: e.g., apparel, electronics, motor vehicles, commercial aircraft, etc.
   - Also proxied by internal flows in MNEs

What is not a GVC?

1. Primary commodities

2. Products sold at auction or with an international reference price (Rauch, 1999)

Global Value Chains and the geographic separation of innovation from production: differential outcomes over time (the "mixed blessings of GVCs" (Pahl and Timmer, 2019))

Type of economy	Competitive outcomes	Employment outcomes
High-income economies (e.g., USA)	• High share of value capture • Control over industry architecture and trajectory (*de facto* standard setting and buyer power)	• Job-light innovation: high market cap with relatively small employment • Continued or accelerated secular decline in manufacturing employment
Middle-income industrializing, GVC-linked economies (e.g., China)	• Low share of value added in GVCs • Exclusion from innovative functions, product trajectories, and standard-setting • Weak or lopsided industry institutions • Foreign exchange earnings from export processing can be invested in domestic innovation capacity – but will it work?	• Employment creation in manufacturing • Two-tier industrial structure in manufacturing: export vs. domestic/SOEs

A few points of discussion

1. A focus on bi-lateral and firm level dynamics and strategy (e.g., hold-up, reallocation of resources from manufacturing to innovation)…
   - …can miss industry-level dynamics, especially the positive external scale benefits from vertical specialization…
   - …and can undervalue the innovation and standard-setting benefits from geographic specialization…
   - …much less the role of domestic institutions and geopolitics. ie., the state

2. Geographic specialization in complex GVCs…
   - …appears to be path-dependent, driving market and geographic concentration within narrow vertical segments…
   - …and therefore creating vulnerabilities for firms and countries that can be minimized, exploited, or even weaponized

General pressures on GVCs

- Climate change
  - Pressure to reduce carbon emissions could result in reshoring, nearshoring, and intensification of regional production chains
- Digitization
  - Shift from trade in good to trade in services, could rebalance GVCs away from export processing
- Rise of Technological and Economic Nationalism
  - Cyber-security threats will favor allied trading partners
  - Break-up of global system and strengthening of regional blocs?

Source: UNCTAD World Development Report 2020

Specific pressures on GVCs

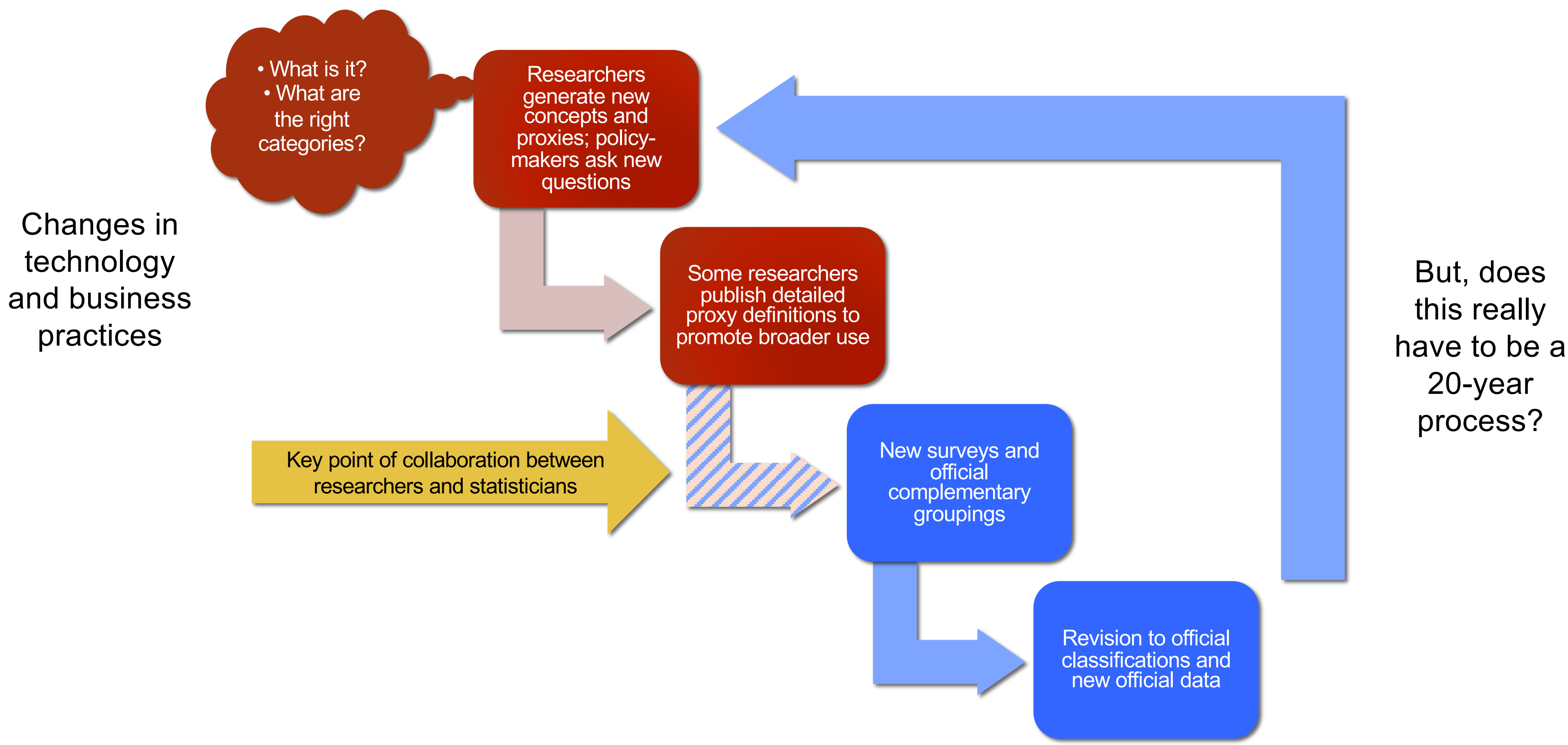
- 2009-2011: Slowdown in world trade after Global Financial Crisis
  - **“**Slobalization” (Bakas, 2015), coming on the heels of the largest reconfiguration of productive assets in history
  - Rules-based global system, e.g., WTO loses relevance; bi-lateral trade deals begin to dominate
  - The Great Doubling (Freeman, 2006): opening of labor markers and product markets in Eastern Europe, India and China after 1989 runs out of steam
  - Slow growth in FDI, but…
  - …China, continues to capture the lion’s share of new emerging economy investment and dominates trade in key segments
- 2016-2020: rules-based system comes under attack
  - Economic nationalism in trading partners and anti-globalism at home: pressure to decouple and reshore
  - US-China trade war spikes and spills over to other trading partners
- 2020: Covid-19 Pandemic
  - Exposes vulnerabilities in supply chains for critical and non-critical items, including concentration of key inputs in countries at the center of the export-led GVC modes
  - Calls GVC SOPs into question, especially lean “just in time” supply chain management for ”just in case” buffers
  - “Vaccine nationalism” also becomes evident, being worked on now

Policy profile for GVCs and supply chains is as high as its ever been in memory

Measurement challenges and some solutions

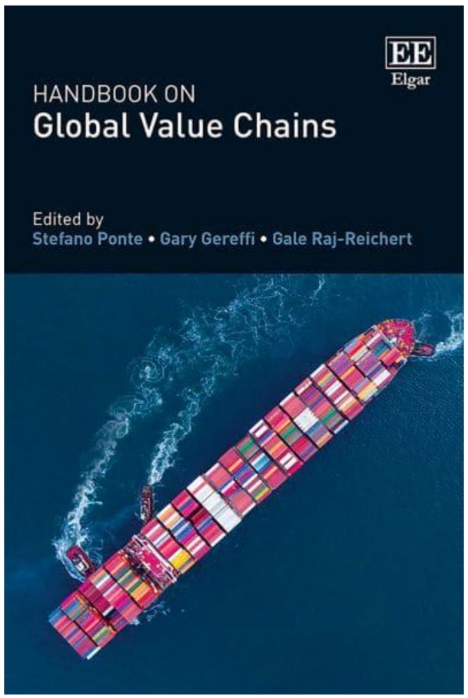
- The challenge is collecting data on trade and FDI flows by industry, value chain stage (primary, intermediate, and final) and on knowledge-intensive and ICT-enabled services
- Firm ownership, which suddenly mattered more than anything since 2016, is commonly the missing critical dimension.
- Better supply chain transparency and traceability has become essential, and not only for lead firms
- Solutions so far are piecemeal, and include:
  - Repurposing existing data (new complementary groupings, microdata mining and linking)
    - Trade in value added estimates combine supply-use tables with international trade statistics (Wang et al paper)
    - Business registers and other administrative data (e.g., Fort *et al* paper)
    - GVC-relevant groupings within existing classifications for trade in goods and ICT-enabled services
  - New and improved official surveys (e.g., on business functions, enriched supply-use tables)
    - International sourcing surveys using a business function classification (e.g., Smeets and Warzynski paper)
  - Leveraging private and semi-private data (e.g., teardown reports, industry association data, enterprise ownership data in for-profit directories)
    - E.g., recent report on the semiconductor GVC by BCG and SIA showing extreme global interdependence and geographic specialization in a key industry

Interaction between the policy, statistical and research communities can help drive the creation of more relevant and useful statistics…



Thank you!

For more information, see:



PART I MAPPING, MEASURING AND ANALYSING GVCs