Trade in Value Added: Update on work with NSF

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Common uses of Trade in Value Added (TiVA)

- Trends in global production and trade
- Extent of regional integration (North America, East Asia, Europe)
- Restructuring of global supply chains in response to crises
- Jobs supported by supply chains
- Country-specific analyses, e.g.,
  - Processing trade in China and Mexico
  - Trends in U.S. offshoring and onshoring
- Beyond value added
  - Trade and the environment—national energy use and CO2 emissions
  - Empirical trade literature—gravity models, trade and labor analysis

Ongoing questions about supply chains

- Critical supply chains and supply chain resiliency
- Effects of demand shifts
- Supply constraints and extended delivery times
- Domestic production capabilities and domestic competitiveness
- Location of R&D and the location of production
- Impact of trade and trade policies
- Employment challenges
- Distributional impact of trade

- These are not specifically TiVA questions
  - but TiVA could be part of the answer

Key pieces of the narrative

- Single sector analysis
  - How much value added does the U.S. generate in the plastics industry? How much of this value is embodied in plastics exports?
- Forward-looking analysis
  - How much of the value produced in plastics is used by other U.S. industries? How much value generated in plastics is exported by these **downstream** industries?
- Backward-looking analysis
  - What are the sources of inputs to production of U.S. plastics? Are these inputs foreign or domestic? If imported, were the imports imported as plastics or in **upstream** industries such as chemicals or petroleum?
- Challenge in presenting TiVA results:
  - Clearly indicating which measure is being presented
  - Presenting results with timeliness and granularity

Advantages and disadvantages of single-country TiVA analysis

- Single-country analysis better addresses ongoing questions and meets stakeholder needs
  - Timeliness
  - Disaggregation
  - Consistency with official statistics
  - Customization
- Main disadvantages:
  - Lack of information on U.S. value in our imports
  - Little information on length or complexity of supply chains outside U.S. borders

TiVA is a new focus for established analysis

- How does single-country TiVA analysis extend beyond input-output analysis?
  - Key distinction: Disaggregation of imported inputs
  - New focus could suggest methodological improvements
  - New focus also suggests possible extensions
    - Value-added breakouts
    - Sectoral disaggregation
    - Extended SUTs

Where should we look for extensions?

- Accounting for heterogeneity increases accuracy and almost always generates higher estimates of supply chain integration
- Different sources of heterogeneity suggest different extensions
  - Heterogeneity in factors of production → disaggregate value added
    - Including labor (demographics) and capital (asset type)
  - Heterogeneity in sourcing of inputs → disaggregate industries
  - Heterogeneity in intensity of input use by firm → use extended SUTs

A few more places to look

- Industries combining capital goods and consumer goods
  - BEA/NSF are splitting Miscellaneous Manufacturing into medical equipment and other misc. manufacturing (including jewelry, sporting goods, and toys) 👍
  - BEA/NSF are splitting Publishing into software publishing and print publishing 👍
  - Possible to split Electrical Equipment into household appliances and industrial equipment?
- Industries combining parts and final goods
  - Possible to split "Motor vehicles, bodies and trailers and parts"?
- Industries with stakeholder interest, e.g., critical supply chains
  - BEA/NSF are splitting out semiconductors and pharmaceuticals 👍
  - Possible to split out batteries, minerals, or other critical industries?

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