



# Trade in Value Added

Maria Borga  
Jiemin Guo

BEA Advisory Committee  
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# Measures of Trade

- Trade in goods in the International Transactions Accounts (ITAs) is measured on a gross basis
  - Full value of the good attributed to the country the transaction is with
- Rise of global value chains
  - Goods that cross border multiple times for further processing are counted multiple times
- Measured on a value added basis
  - Removes home country content of imports/foreign content of exports
  - Value added attributed to the country that is its source

# Gross vs. Value Added Basis

Trade	Exports	Imports	Balance
Gross basis	Domestic VA that stays overseas +	Foreign VA that stays home +	Domestic VA that stays overseas -
	Domestic VA that will return home in imports +	Domestic VA that is embedded in imports +	Foreign VA that stays home
	Foreign VA that is embedded in exports	Foreign VA that will be embedded in exports	
Value added basis	Domestic value added that stays overseas	Foreign value added that stays home	Domestic VA that stays overseas - Foreign VA that stays home

# How Trade in Value Added (TiVA) is Measured

- Case studies
  - iPod, iPhone, iPad, and Barbie
  - Cannot be done for all products
  - Identifies only country of the first link in the chain
- Input Output (I-O) approach
  - Use national I-O tables and bilateral merchandise trade statistics by end use category
  - Create links between exports in one country and use as intermediate inputs or final demand in importing country
- Direct measurement

# Studies of TiVA Measures

- Koopman, Powers, Wang, and Wei (2010), “Give Credit Where Credit is Due: Tracing Value Added in Global Production Chains”
- Johnson and Noguera (2012), “Accounting for Intermediates and Trade in Value Added”
- Maurer and Degain (2010), “Globalization and Trade Flows: What You See Is Not What You Get”
- IDE JETRO
- WTO and OECD Trade in Value Added Database

# Results from Two Studies

- Koopman, Powers, Wang, and Wei (2010)
  - Built their own global Inter-Country I-O table
  - 26 countries and 41 sectors
    - Treated China processing and Mexico processing as a separate exporters from China and Mexico for domestic production
  - 41% reduction in U.S. trade deficit with China in 2004
  - 40% increase in U.S. trade deficit with Japan

# Results from Two Studies (Continued)

- OECD-WTO TiVA database
  - Global I-O table covers 57 countries and 37 industries
  - The database publishes results for 40 countries and 18 industries due to concerns about quality of the underlying data
  - 25% reduction in U.S. trade deficit with China in 2009
  - 60% percent increase in U.S. deficit with Japan

# Insights Gained from TiVA Measures

- Place in global value chains
  - Countries upstream in value chains produce inputs used by other countries
- Bilateral trade issues/policies
  - Countries may have persistent trade surpluses due to position at end of global value chain
  - Anti-dumping and other trade measures may adversely affect domestic producers of intermediate inputs
- Revealed comparative advantage
  - Gross flows may distort

# Limitations of TiVA

- Quality of available international statistics for TiVA needs to be understood
  - Inconsistent international statistics: total global gross exports does not equal total global gross imports
  - Variability in timeliness and level-of-detail of benchmark and annual accounts used to construct international I-O tables
  - Reliance on mechanical procedures to “balance” statistics and allocate imports to using industries (“proportionality” assumption)

# BEA I-O Accounts

- BEA publishes Benchmark and Annual I-O accounts
  - Benchmark (500 industries/products): based on Economic Census; 2007 Benchmark to be published in December, 2013
  - Annual (65 industries/products): time series for 1998-2011
- U.S. I-O accounts are incorporated in these international I-O tables used in measuring TiVA
- However, these international I-O tables offer much less industry detail than available in United States

# U.S. TiVA—How BEA’s I-O Accounts Can Be Used

- BEA’s I-O accounts can be used to estimate U.S. domestic value-added share of gross exports, as well as the foreign import share of gross imports on a bilateral basis
- Estimation of U.S. TiVA can be improved by using greater industry/product detail
  - Use of aggregate data and mechanical updating procedures can bias estimates
- Estimates of U.S. TiVA can be improved by incorporating data on import use by industry
  - New data collection of the foreign content of business expenses, and expanded coverage of the type of business expenses, on Census Annual Surveys (e.g., Annual Survey of Manufactures) would provide independent estimates of import use by industry

# International Standards for Measuring Trade

- International Merchandise Trade Statistics
  - Physical movement of goods
  - Based on Customs documents
- Balance of Payments (BOP) Measures
  - Before BPM6, assumed change in ownership when good crossed the customs frontier → BOP adjustments were small
  - BPM6 reemphasized change in ownership
    - Goods for further processing
    - Merchanting

# Goods for Further Processing

- Goods for further processing standard
  - Goods sent abroad for processing and re-imported are excluded from trade flows when no change in ownership takes place
  - Record processing fee as a service—“manufacturing services on physical inputs owned by others”
  - No impact on current account balance but shift from goods to services trade
- Not same as TiVA but may impact TiVA measures
- Some countries implementing, but others are not
  - Different data sources
  - Different methods

# Conclusion

- BEA encourages further research and development of TiVA measures
- BEA will continue to work with international organizations constructing international I-O tables
- BEA will continue to improve its I-O and trade statistics
  - Examine ways to relax import proportionality assumption
  - Reconciliation exercises with other countries