

ON OECD I-O DATABASE AND ITS EXTENSION TO INTER-COUNTRY INTER- INDUSTRY ANALYSIS

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INPUT-OUTPUT ANALYSES”*

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Statistical challenges and methodologies of developing global inter-industry model

- Background issues
- Compilation procedures
- Data sources
 - Input – output tables
 - Bilateral trade database in goods and services
 - Industry database
- Application examples
- Summary

Background issues

- Globalisation issues: Trade conflicts of final goods balances → Evolution of global supply chains
- Deviations in:
 - Geographical locations of producers and consumers
 - Marginal impacts on value-added of each country
 - Trade balances in Goods & Services and value-added
 - Gained and displaced jobs
- Recent evidences
 - Increased processing trade functions in emerging Asia and Eastern Europe
 - Great Trade Collapse (GTC)
 - Specialisations in production stages / tasks
- Inter-country (regional) input-output model is (still) most effective empirical tool to understand the economic structure

Inter-country I-O framework

		Country A		Country B		Country A		Country B	
		Ind 1	Ind2	Ind 1	Ind2	CP	GFCF	CP	GFCF
Country A	Ind 1	■	■	■	■			■	■
	Ind 2	■	■	■	■			■	■
Country B	Ind 1	■	■						
	Ind 2	■	■						
VA		■	■						
Output									

■ Domestic input by Country A

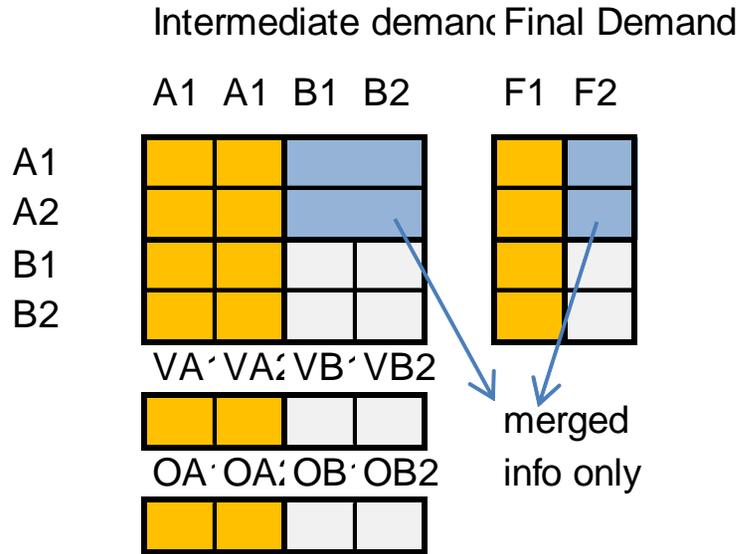
■ Exports of final goods to B

■ Exports of intermediates to B

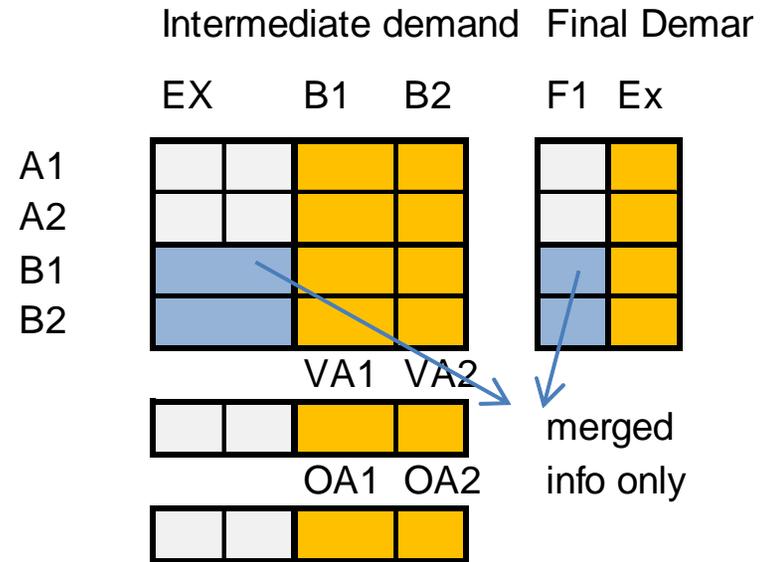
■ Imports of intermediates from B

If we have *ideal I-O and conventional trade* dataset

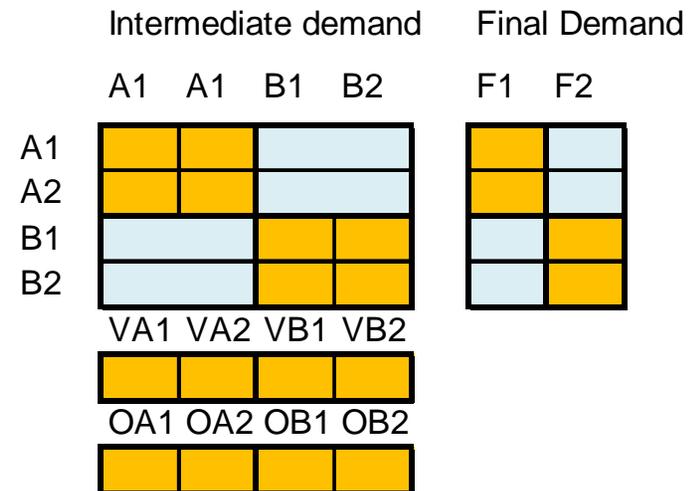
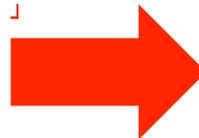
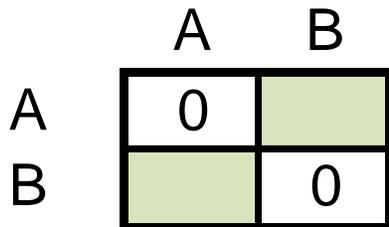
Country A's I-O



Country B's I-O

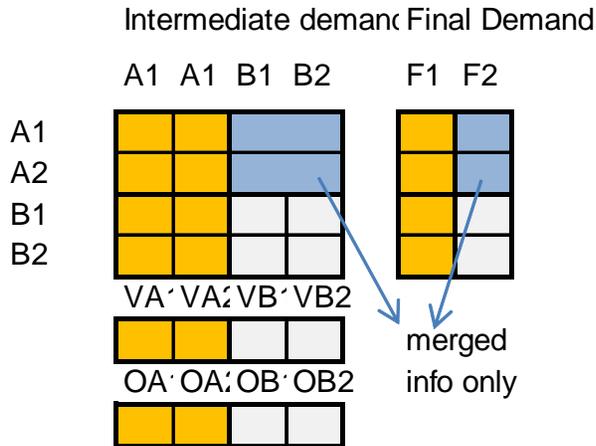


Bilateral trade goods and services

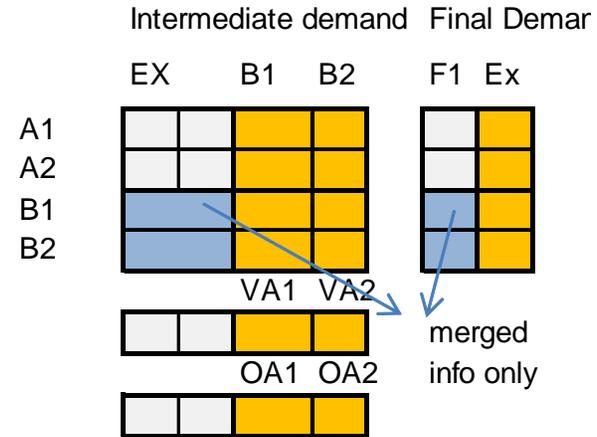


If we have *ideal I-O* and *end-use categorised trade* dataset

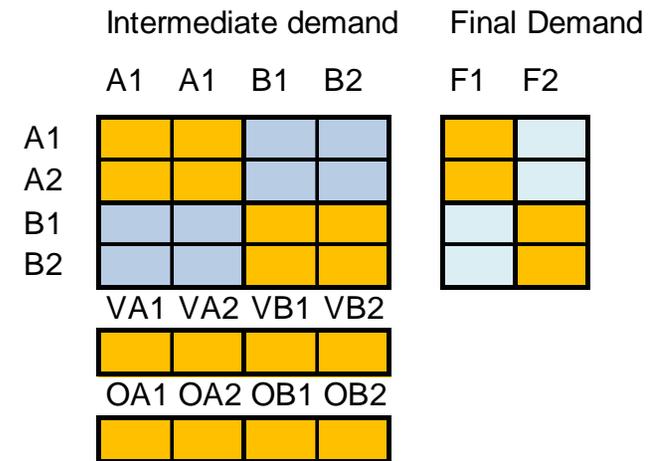
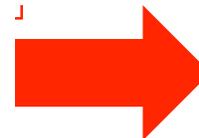
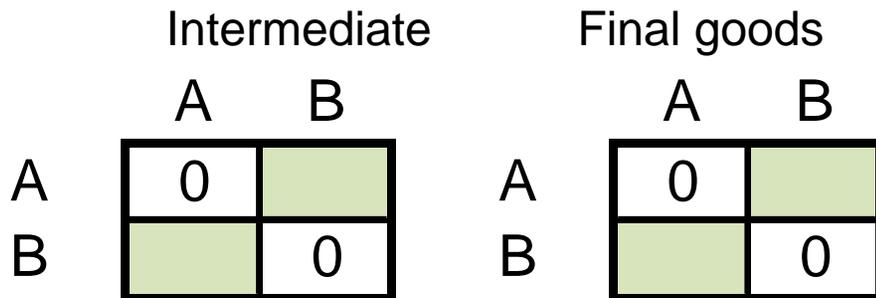
Country A's I-O



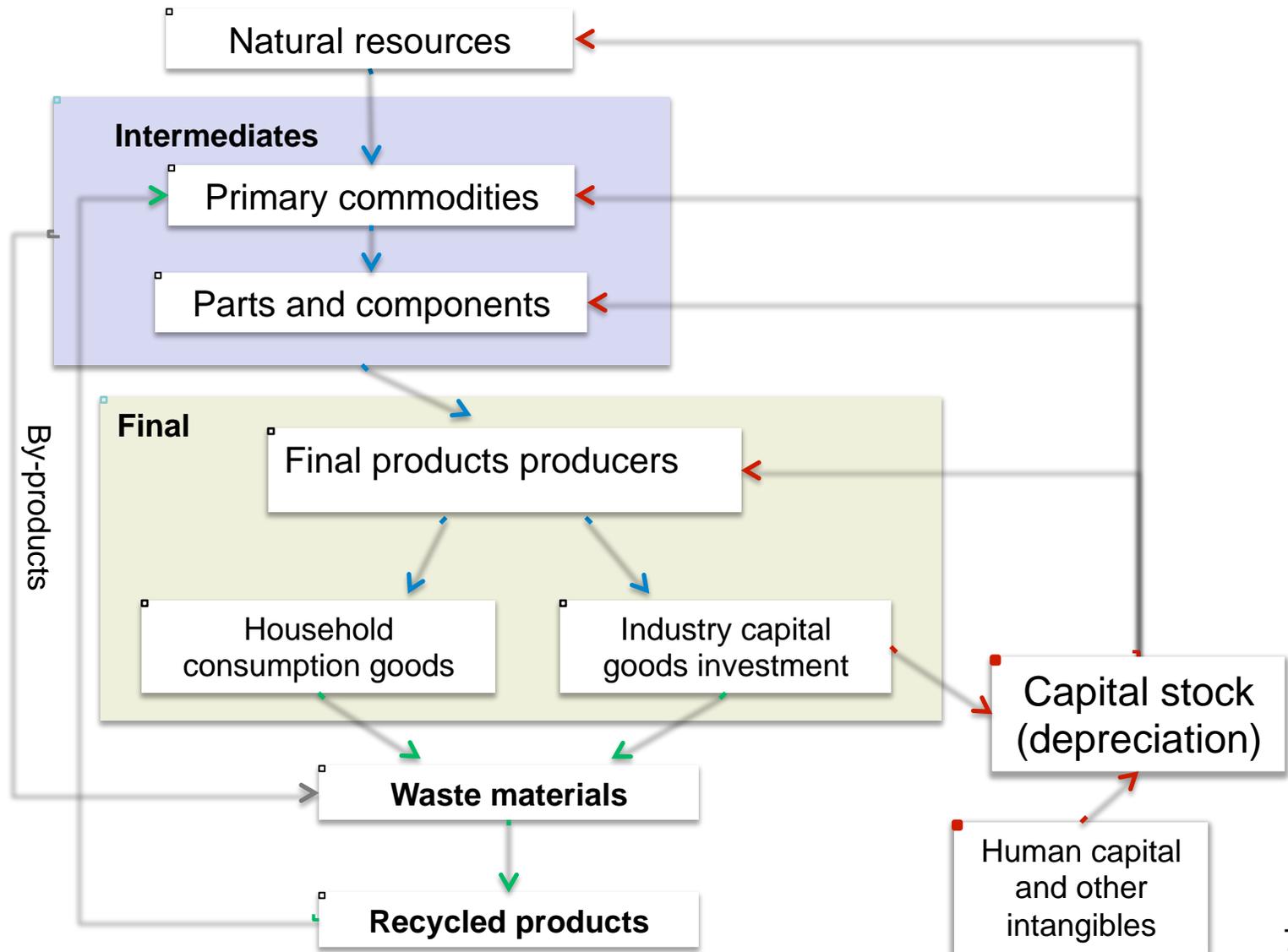
Country B's I-O



Bilateral trade goods and services By end-use category (9 category)



Inter-industry transactions and product cycles





Data sources of internationally comparable database

- OECD
 - Input –Output Database: Industry-by-industry symmetric
 - Bilateral trade data by industry and by end-use (goods)
Trade in Service (bilateral services)
 - STAN Structural Analysis Database (NA components)
 - National Accounts:
- Other
 - UNSD classification correspondence keys
 - World Bank WDI
 - IMF BOP / IFS
 - UN Population



Compilation procedures of OECD Databases

- Periodical submission of data sources (both published and non-published from OECD members and major non-OECD)
- Collection of additional data sources (related statistics and analytical databases e.g. UNSD, JIP semi-official data)
- Data cleaning e.g. patents, business directory, trade statistics
- Development of harmonisation conversion keys
- Compilation procedures
- Publish from web site, data dissemination system, special extractions for external studies
- Specialised analytical tools for displaying indicators

OECD Input-Output tables

- **Format**
 - Industry-by-industry symmetric 48 sectors (max)
 - ISIC Rev 3 industry classification
 - Import and domestic transactions are separated
 - Basic price (1993 SNA)
- **History**
 - 1995ed: 10 countries (1970-1990)
 - 2002ed: 24 countries (1995)
 - 2006/09ed : 40+ (1995-2000-2005)
(OECD-1 / G20-1 / BRIICS)
 - Most Mid 2000s tables are preliminary, they will be replaced when national benchmarks are available

Coverage of OECD I-O 2009ed

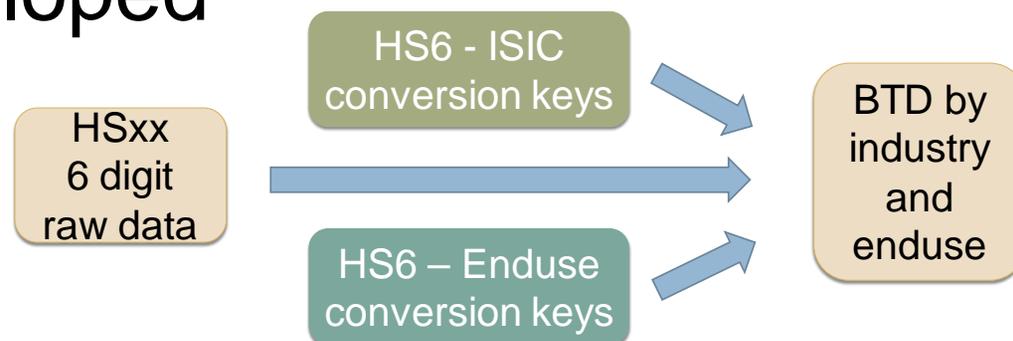
OECD(A-J)	mid90	early00	mid00	OECD(K-U)	mid90	early00	mid00	Non-OECD	mid90	early00	mid00
Australia				Korea				Argentina		-	-
Austria				Luxembourg				Brazil			
Belgium				Mexico	-	-		Chile		-	
Canada				Netherlands				China			
Czech Rep.				New Zealand			-	Chinese Taipei			-
Denmark				Norway				Estonia			
Finland				Poland				India			
France				Portugal				Indonesia			
Germany				Slovak Republic			-	Israel		-	
Greece				Spain				Malaysia	-		-
Hungary				Sweden				Philippines			-
Iceland	-	-	-	Switzerland	-		-	Russia			-
Ireland				Turkey				Singapore			-
Italy				United Kingdom				Slovenia	-		
Japan				United States				South Africa			

Available year, -: not available

 will be updated
 will be available

Bilateral trade by industry and end-use

- Building ‘sustainable process’ for regular updates using ‘BEC method’ (BEC = Classification by Broad Economic Categories)
- Conversions from all revisions of HS (88, 96, 02 , 07) to both BEC and ISIC have been developed



Application examples: OECD studies

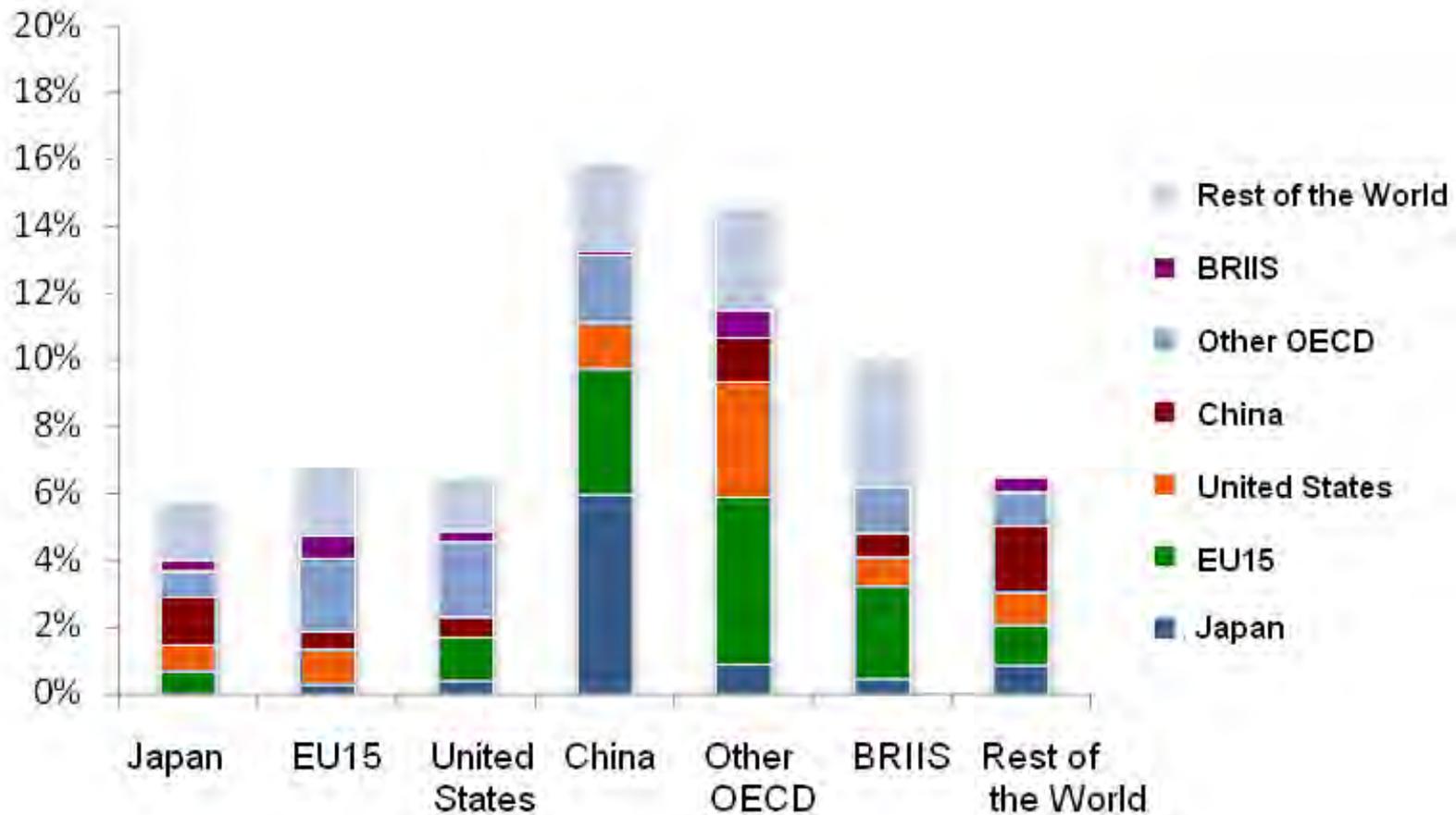
- Green growth strategy: Environmental footprint
 - CO₂ emissions and freshwater embodied in international trade
- Global value chains
 - Increased demands for understanding fragility and underlying risks behind the evolutions of production networks
- Great Trade Collapse (2008-2009)
- Additional dimensions on external trade balances
 - Merchandise trade (OECD and UN trade statistics)
 - Balance of payment (National Accounts / I-O)
 - Trade in Value-Added



OECD project on measuring Trade in Value-Added

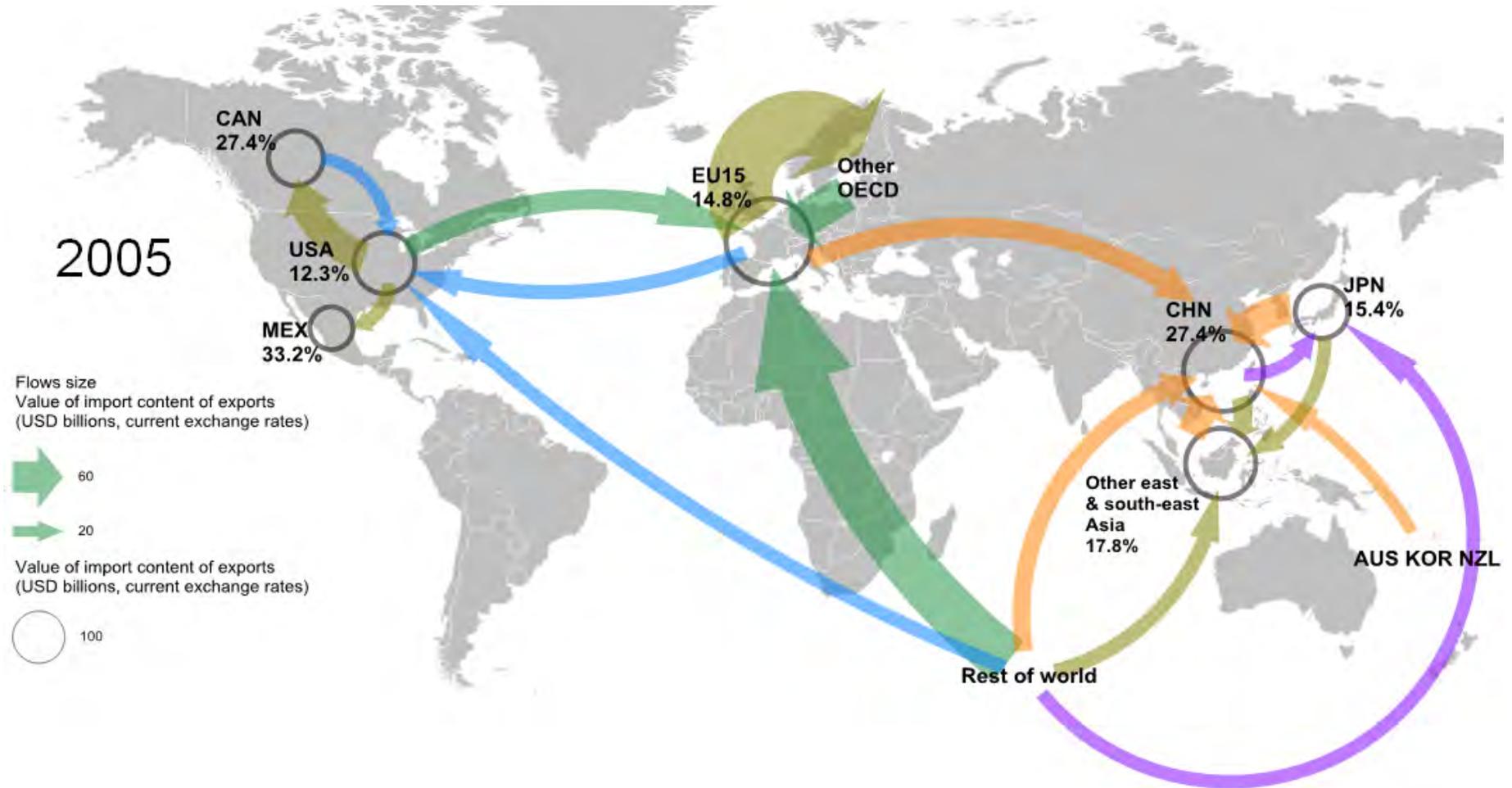
- Global coverage: OECD34 / BRIICS / ASEAN9 /EU27
- Inter-country I-O and Bilateral trade by category are the central databases
- Trade and value-chains indicators
- The databases facilitate comparisons of trade in VA with conventional monetary trade balances
- Linking trade and industry micro data (TEC project)
→ pseudo-surveyed inter-country linkages

Vertical trade: the import contents of exports (2005)



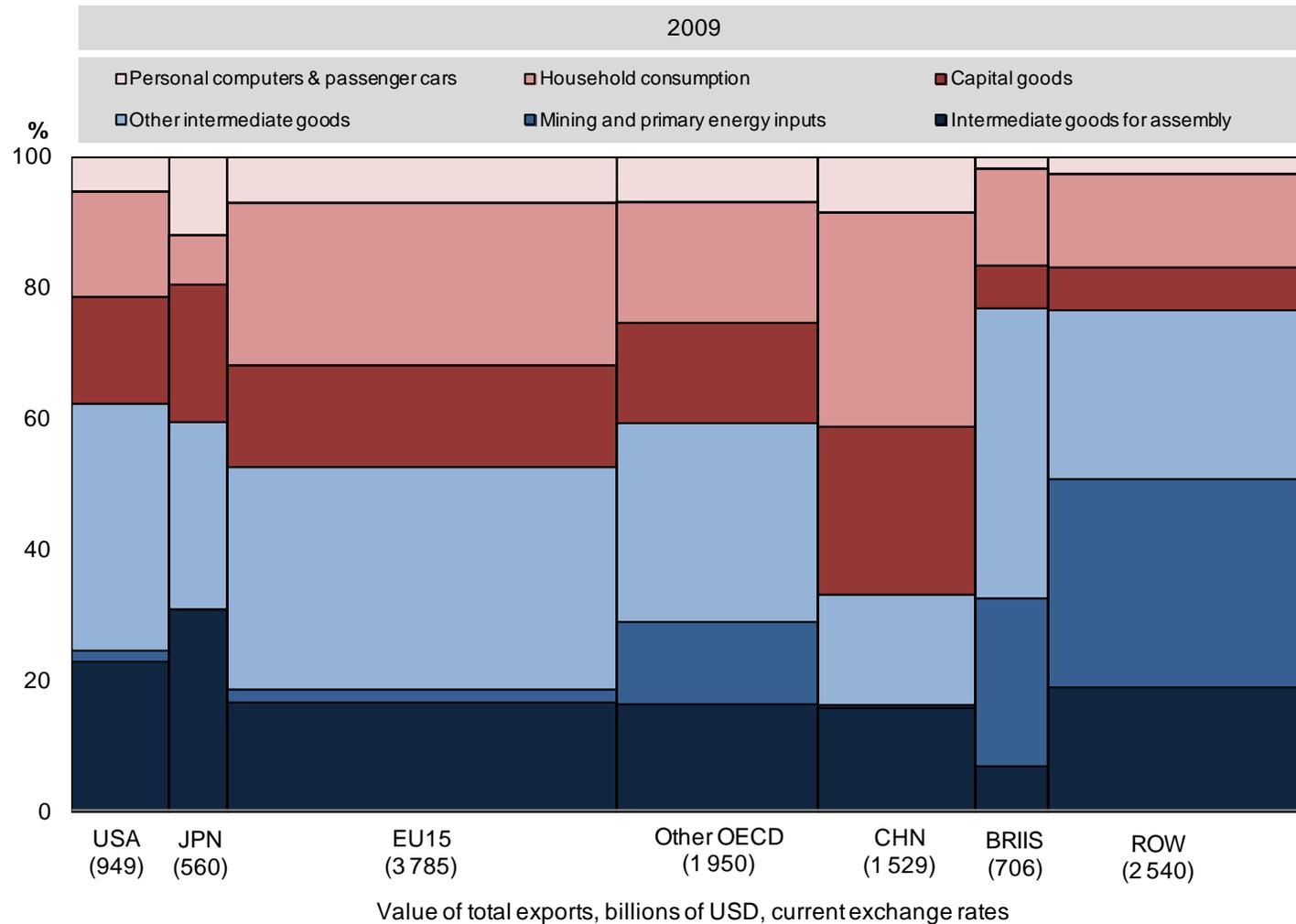
Source: OECD Inter-country inter-industry model, 2011

Import contents of exports



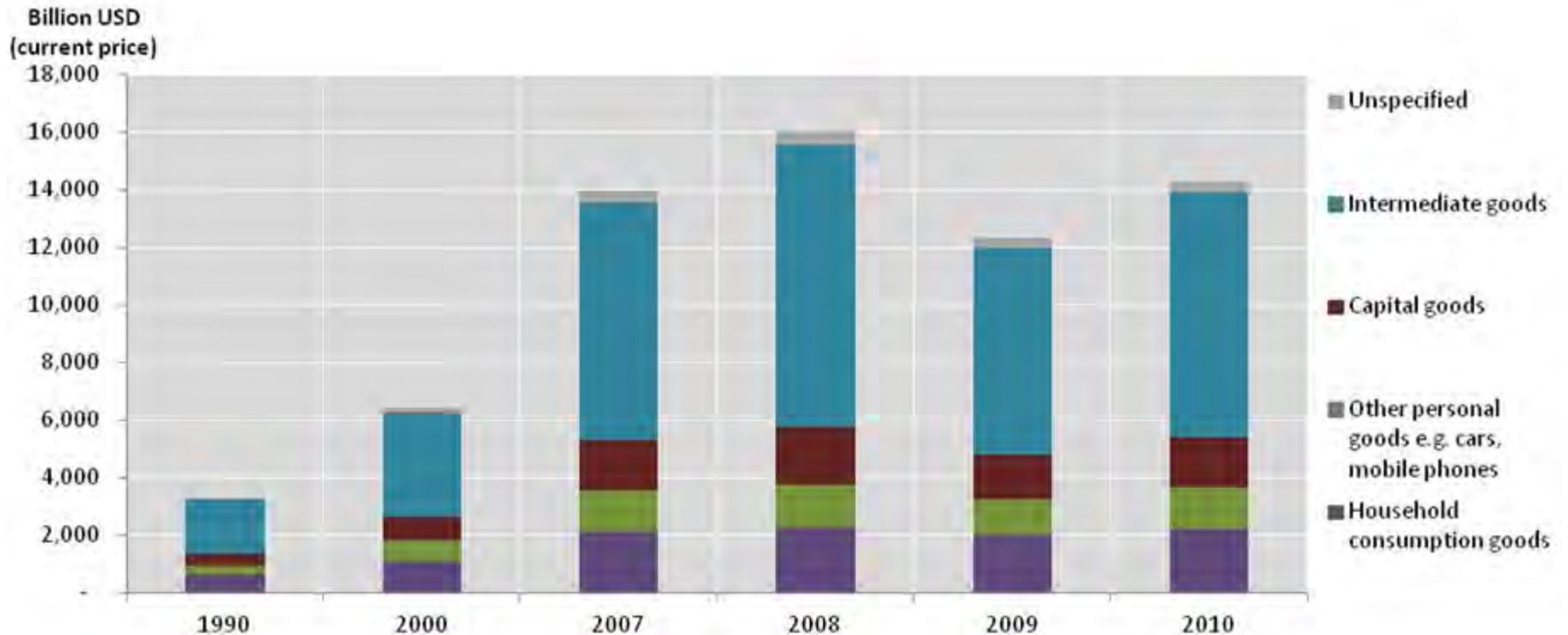
Source: OECD Inter-country I-O model, 2011

World trade by category and by originating region (1995-2009)



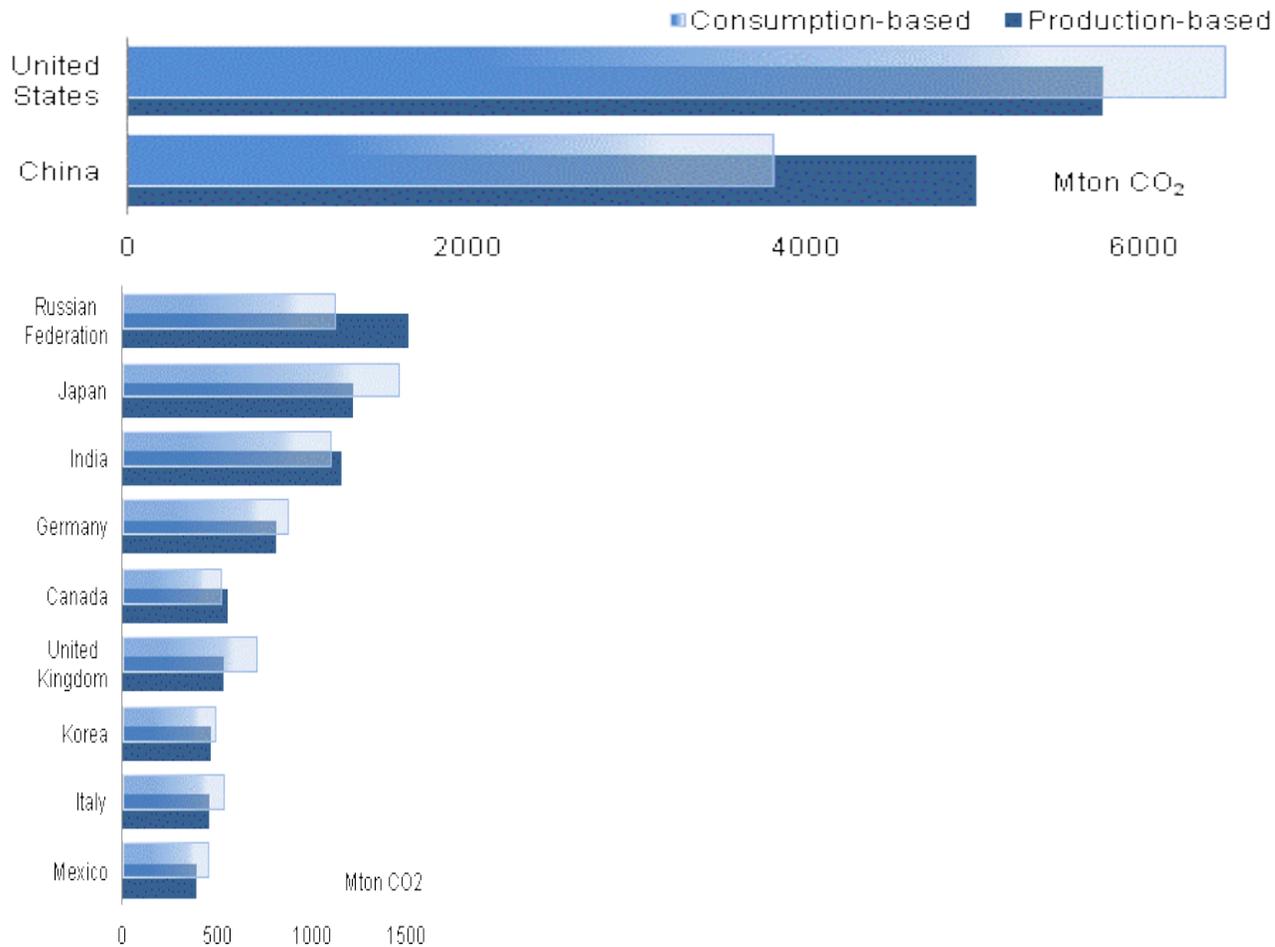
Source: OECD BTDXE 2011 (total of import flow)

World trade by end-use (1990-2010)



Source: OECD BTDIXE 2011 (export flow)

CO₂ embodied in international trade



Source: OECD Inter-country inter-industry model, 2011, IEA CO₂ emissions from fuel combustion, UNFCCC

CO₂ embodied in international trade by emissions source and consumption category



Source: OECD Inter-country inter-industry model (May 2011), IEA CO₂, UNFCCC

Possible extensions

- More countries (e.g. Latin America, Middle East)
- **Supply-side** and **productivity** perspectives are also important i.e. intangibles, human capital, capital ownership via FDI
- **Vulnerability** of supply chains
- More **frequent** analytical framework
- More service trade information

Thank you!

- Addition information available at

www.oecd.org/sti/inputoutput

www.oecd.org/sti/btd

www.oecd.org/sti/inputoutput/co2