

Value Chain Developments: Implications for Maritime Trade

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The Global Value Chain (GVC)/Production Network Phenomenon

Spread of GVCs and production networks the most fundamental change in 21st century trade

- Not new but greatly accelerated

Responds to technical feasibility of modularisation of production

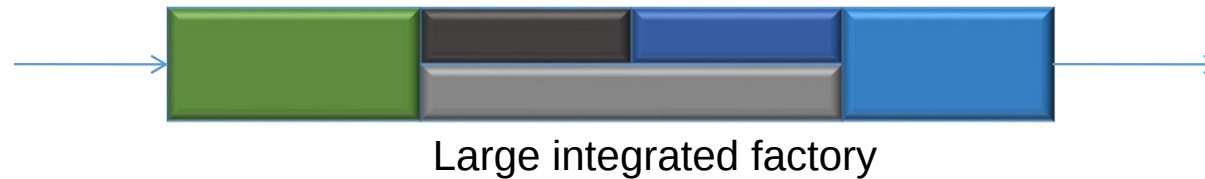
- Production process spread across multiple countries
- Spread of production networks
- “from trade in goods to trade in tasks”
- East Asia emerged as world centre of GVC/production network activity

Key determinants

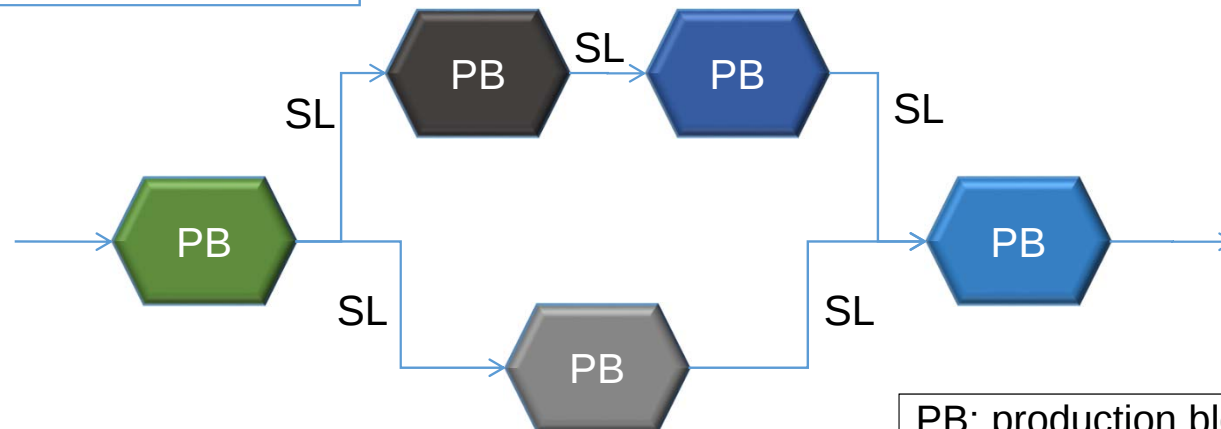
- Production cost efficiencies
- Service link costs (transport, communications, finance, business services etc)

➤ The fragmentation theory: Production blocks and service links
Modularisation of Production is the Key

Before fragmentation

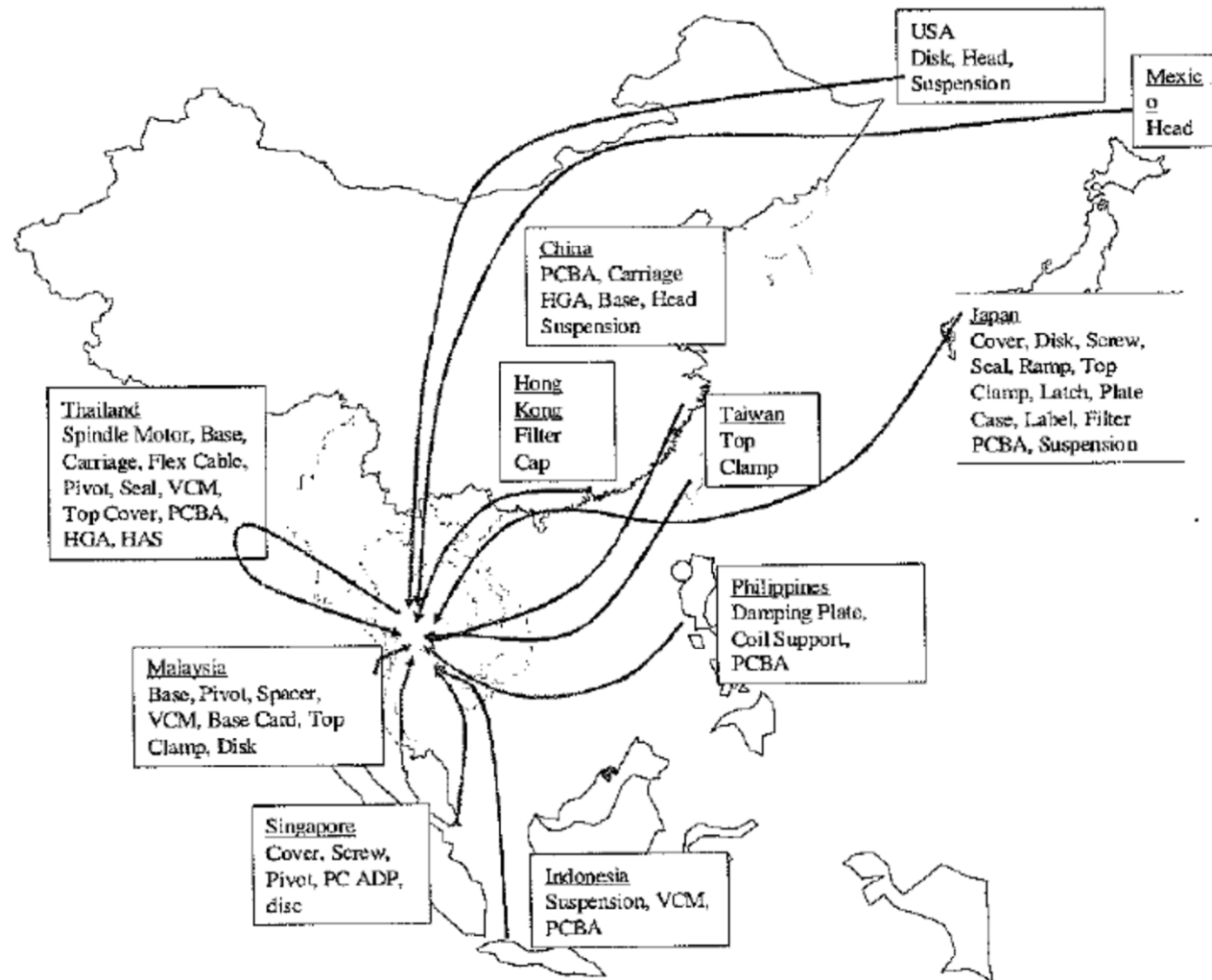


After fragmentation



PB: production blocks
SL: service links

A supply chain example. (This shows the nations where parts are sourced for a hard disk drive assembled in Thailand.)



Source: Baldwin (2008) based on data adapted from Hiratsuka (2005).

GVCs/Production Networks and Industrialisation

- **Comparative advantage defines location of production modules rather than of entire industries**
- **Provides low-cost developing countries with previously unavailable entry points into industrial development in a wide range of industries**
- **Unprecedented global spread of industry**
- **Rise of North-South production sharing**

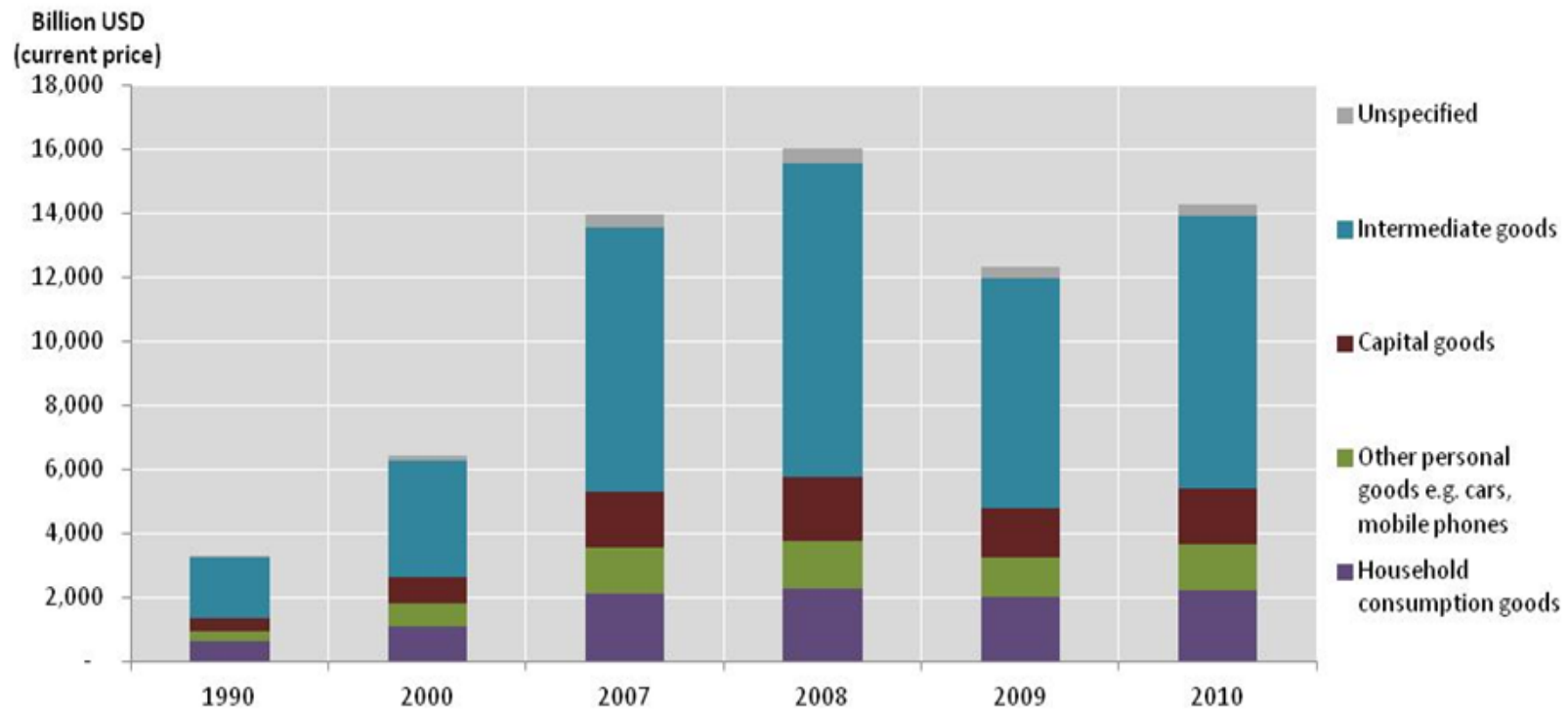
GVCs/Production Networks and World Trade

- GVCs/production networks stimulate expanded trade in intermediate goods
- Trade in raw materials and finished goods augmented by dramatic increase in trade in parts and components
 - Finished goods exported from country hosting the final module in the production sequence (often China in East Asia)
- Multiplication of shipments and border crossings associated with production process
- Intermediate goods account for over 50% of world trade
- Freight costs, port costs, border clearance costs become critical to efficient operation of supply chains
- Efficient logistics with on-time deliveries also critical
- Intermediate good exports linked to GVCs/production networks contribute substantially to recorded growth of world trade in early 21st century

Indicators of Fragmentation

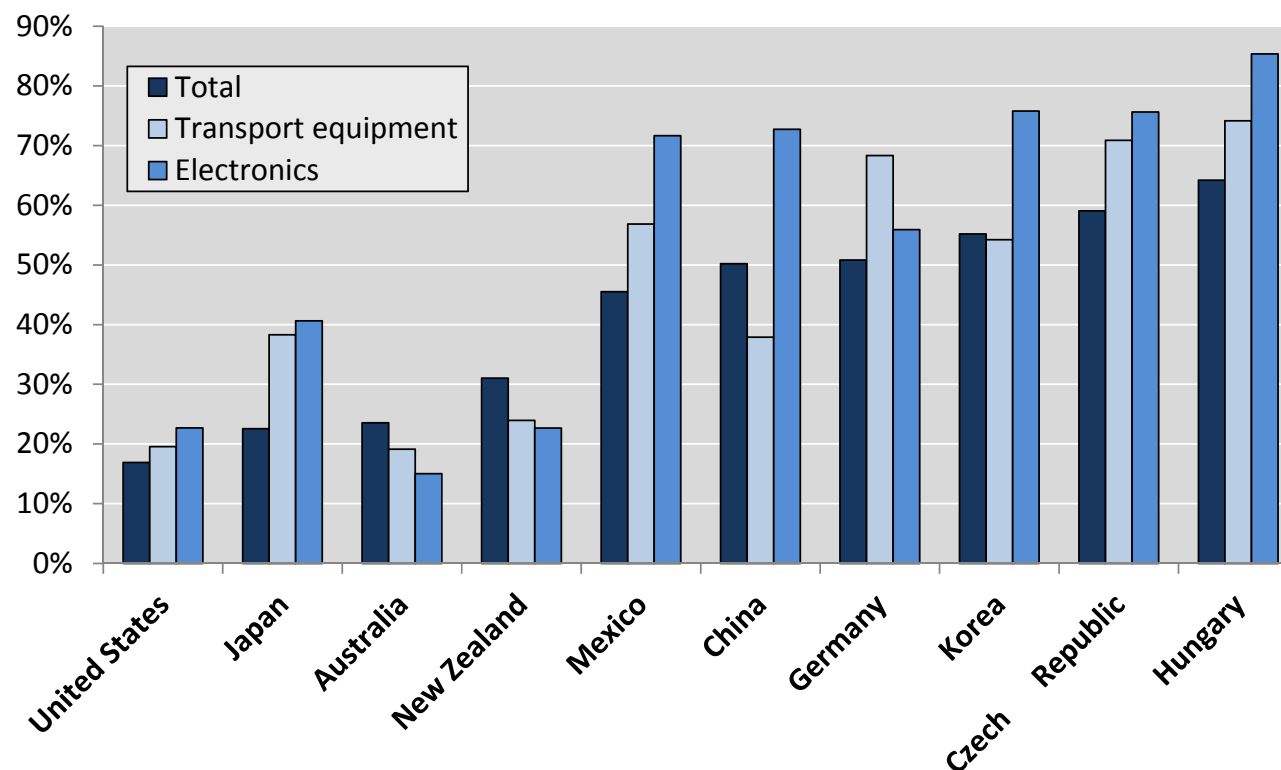
World Trade by End-Use (1990-2010)

Intermediate Good Share Typically Around 60%

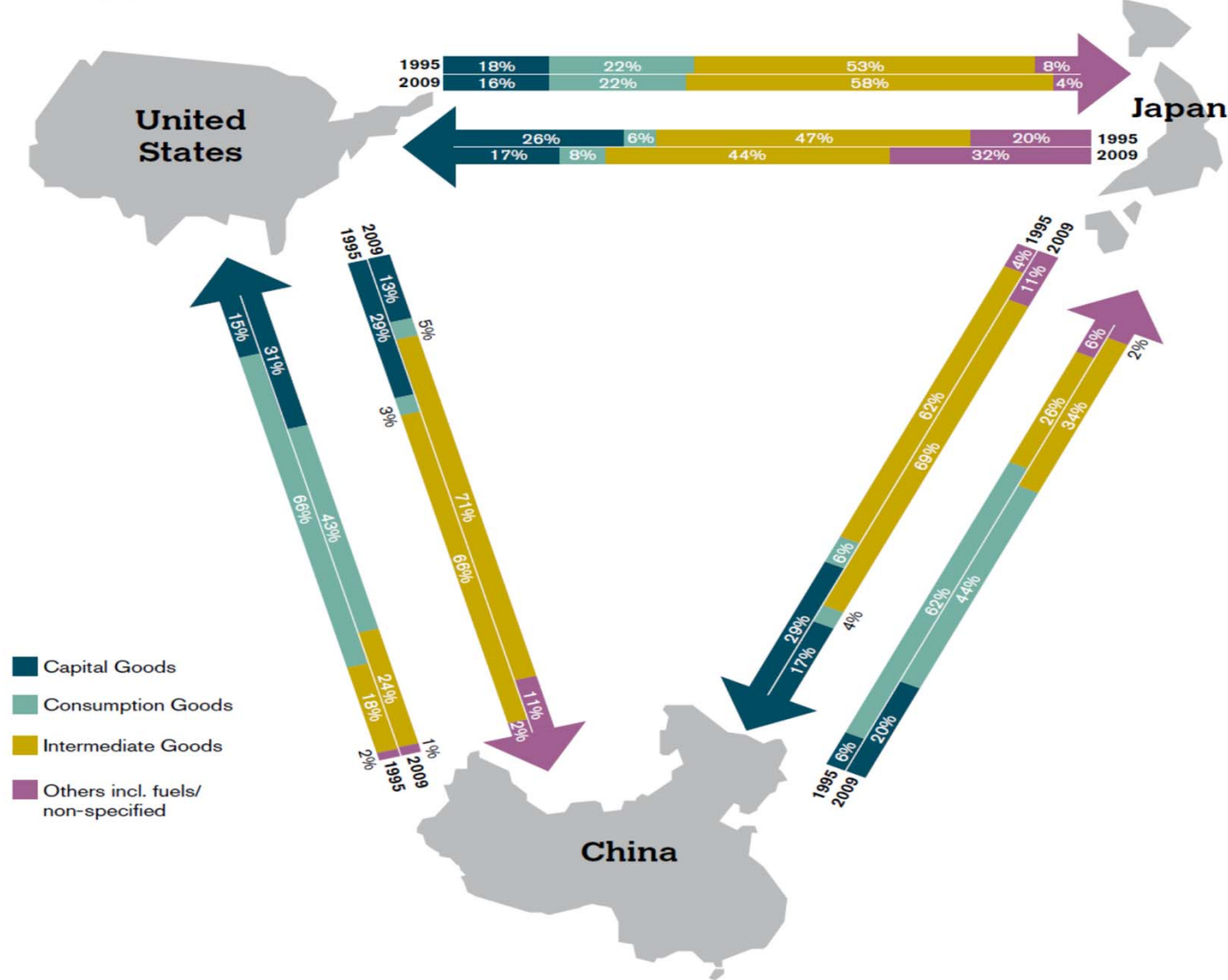


Source: OECD

Significant Share of Intermediate Imports Used in Exports



Bilateral trade flows between China, the United States and Japan, 1995 versus 2009, by type of good.
(percentage)



Source: UN Comtrade Database.

Recent Trends: Contrasting Perspectives

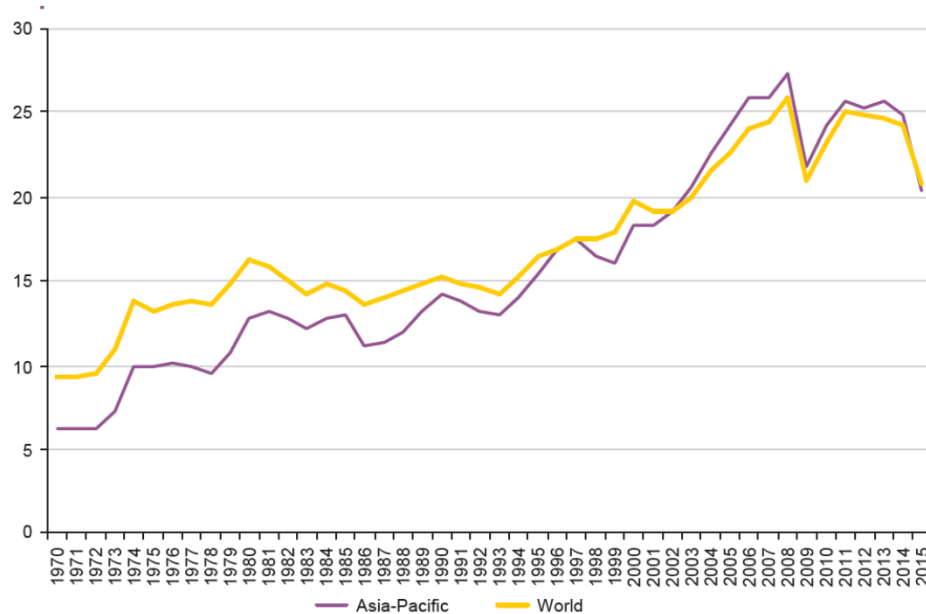
- 1) Sharp contraction in world trade from GFC followed by resumption of growth in world trade at much slower pace than before, more recently a further slow-down
 - Reflecting a slowing of impetus to world trade from fragmentation of production? (Mattoo et al)
- 2) Manufacturing production still not very globalised (Richard Baldwin)
 - Domestic inputs continue to account for largest share of manufacturing output

Input Composition of Global Manufacturing 2009	
Domestic Value Added	29%
Domestic Intermediates	55%
Imported Intermediates	16%

At the same time the relationship between trade and economic growth appears to have changed significantly

Ratio of Imports to GDP

Source: ESCAP 2016

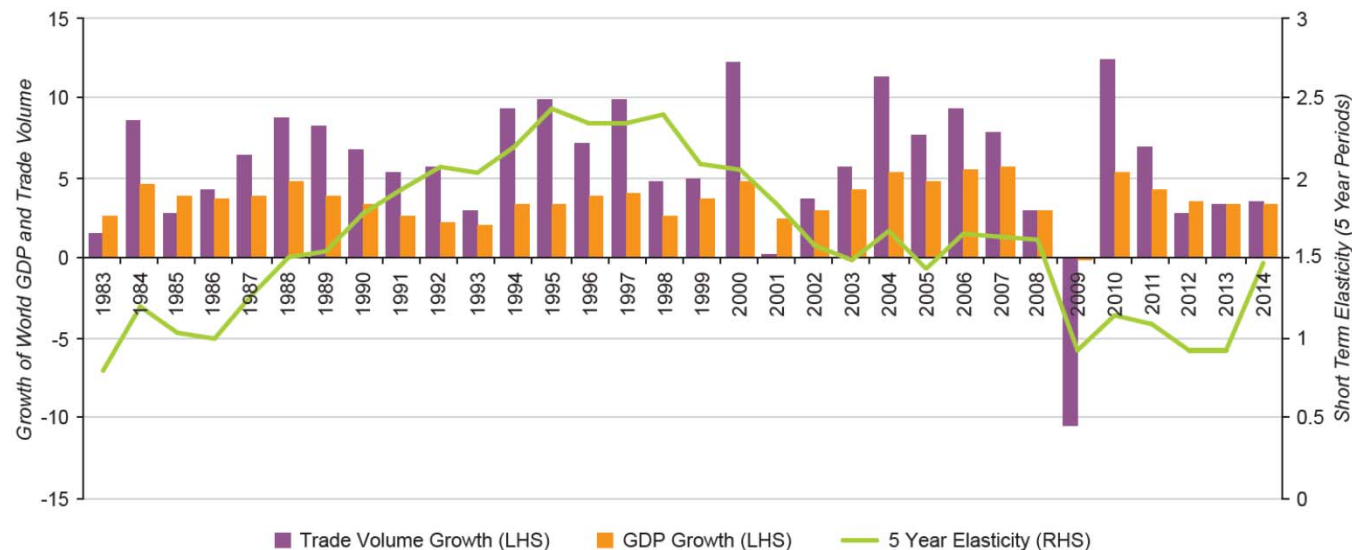


Source: ESCAP Statistics Online, accessed in November 2016.

Unclear whether the change is structural or cyclical

Global Trade and GDP growth, and Five Year Elasticities of Trade with Regard to Growth, 1983-2014

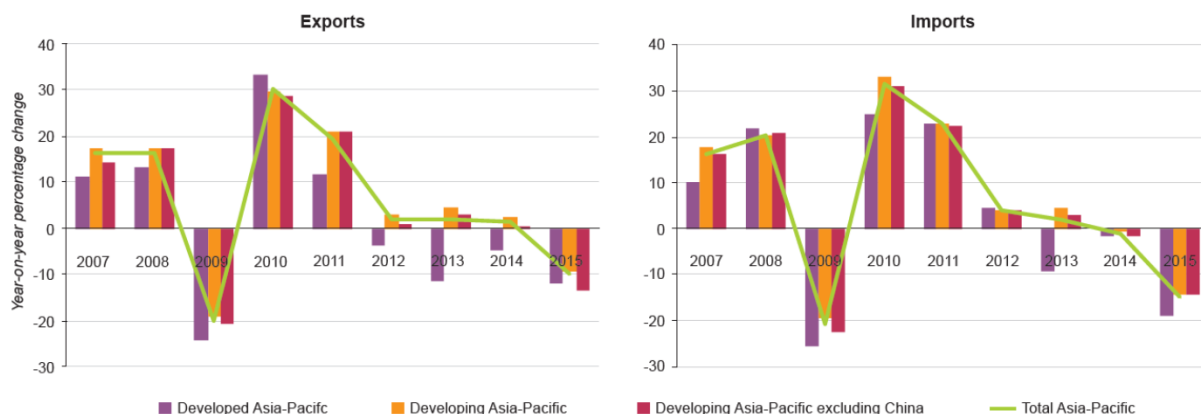
Source: ESCAP 2016



Source: ESCAP calculation based on IMF World Economic Outlook data (accessed August 2016).

Trade Growth Has Declined Dramatically in the Asia-Pacific:

Flattening of Trade Growth Across Asia-Pacific Economies, 2007-2015

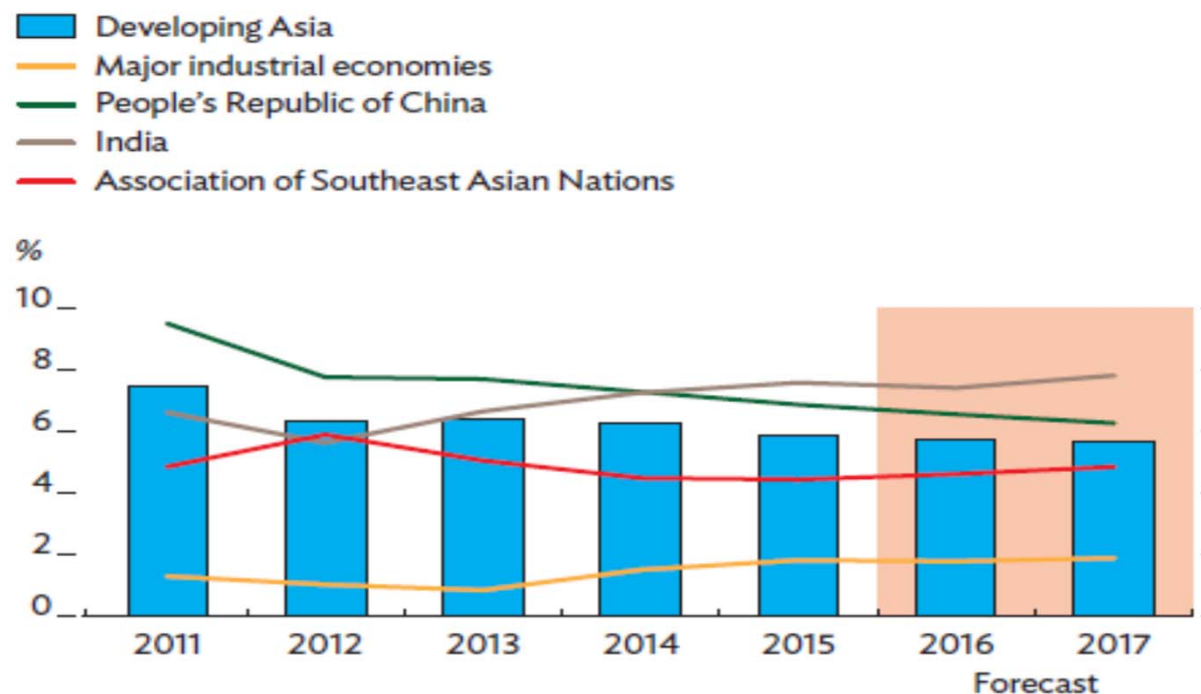


Sources: ESCAP calculation based on country data from WTO International Trade Statistics Database (accessed June 2016). Country data are available from the ESCAP website (ESCAP Statistical Database).

Source: ESCAP 2016

.....growth has also weakened somewhat in Asia, with China's growth in particular declining toward a “new normal” associated with its “new growth model”

GDP Growth Outlook in Developing Asia



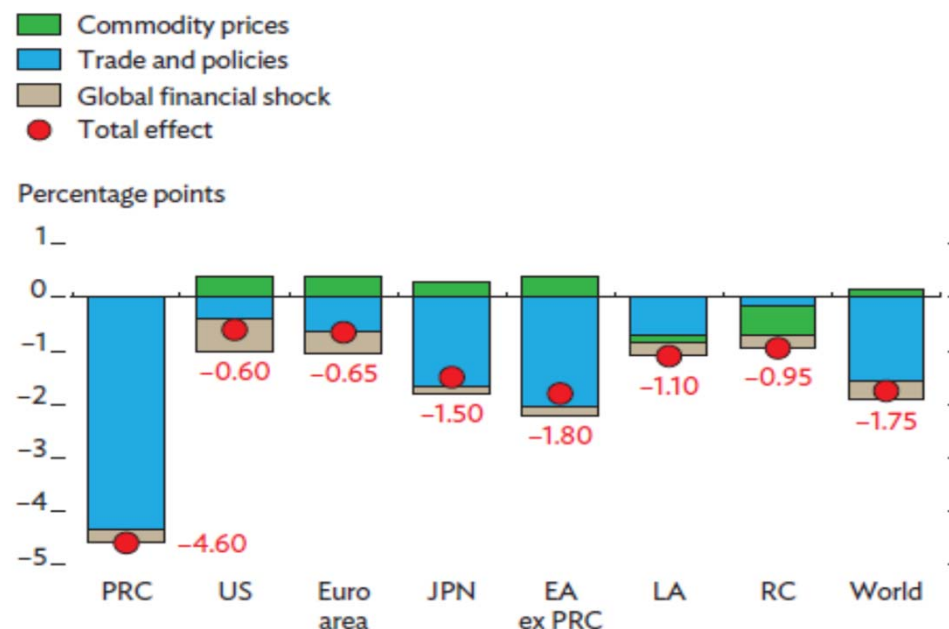
Note: The major industrial economies consist of the United States, the euro area, and Japan.

Sources: US Department of Commerce, Bureau of Economic Analysis, <http://www.bea.gov>; Eurostat, <http://ec.europa.eu/eurostat>; Economic and Social Research Institute of Japan, <http://www.esri.cao.go.jp>; Haver Analytics; Asian Development Outlook database; ADB estimates.

Source: ADB 2016

A “hard landing” in China would have widespread negative spillovers

Effects of a Sharp PRC Slowdown



EA = emerging Asia (India, Indonesia, the Republic of Korea, Malaysia, the Philippines, Singapore, Thailand, Taipei, China, and Hong Kong, China), JPN = Japan, LA = Latin America (Brazil, Chile, Colombia, Mexico, and Peru), PRC = People's Republic of China, RC = remaining countries (Argentina, Australia, Bulgaria, Canada, the Czech Republic, Denmark, Estonia, Israel, New Zealand, Norway, South Africa, the Russian Federation, Sweden, Switzerland, Turkey, the United Kingdom, and Venezuela), US = United States.

Note: The effect is shown as deviation of GDP growth from the baseline in the first 2 years.

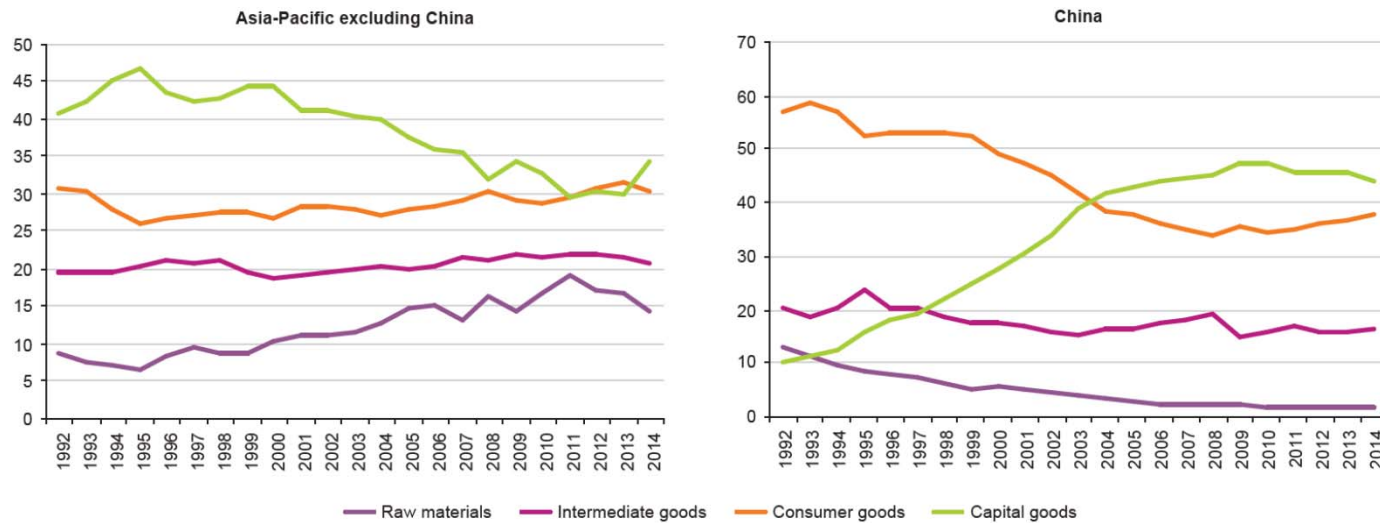
Source: ADB 2016

What Can We Say About the “Trump Risk”?

- **Increased protectionism?**
- **Trade wars?**
- **“Scapegoating China”?**
- **Higher growth and higher interest rates in the U.S?**
- **Implications for value chains?**

There are striking differences between China and the Asia-Pacific in the composition of both exports....

Exports for the Asia-Pacific Region (excluding China) and for China, 1992-2014

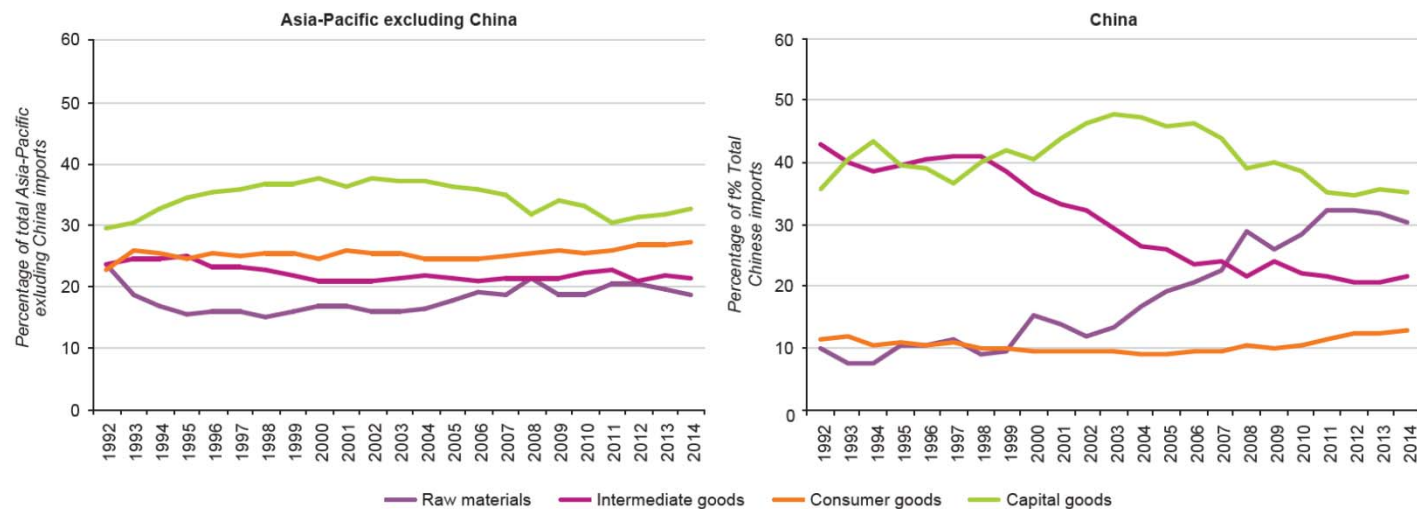


Source: ESCAP calculation based on United Nations COMTRADE data accessed through the World Bank World Integrated Trade Solutions (WITS) database (accessed July 2016).

Source: ESCAP 2016

....and imports

Imports for the Asia-Pacific Region (excluding China) and for China, 1992-2014



Source: ESCAP calculation based on United Nations COMTRADE data accessed through the World Bank World Integrated Trade Solutions (WITS) database (accessed July 2016).

Source: ESCAP 2016

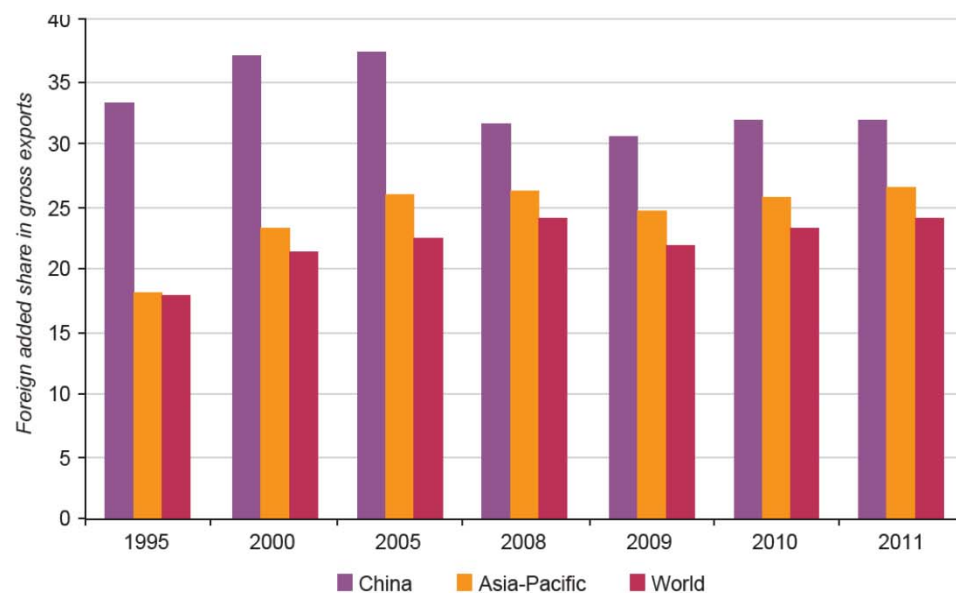
Insights from New Databases (1)

OECD's Trade in Value Added (TiVA) Database

- Separates share of export values into
 - Domestic production and imports
 - Exports of final and intermediate goods
- Shows proportion of exports attributable to production activity in the exporting country
- Highlights countries' participation in GVCs and length of GVCs in different sectors
- Provides new insights on trade balances
- Highlights critical role of services in globalised production
 - Services account for at least 48% of world exports on a value added basis

The significant share of foreign value added in exports is now well-recognised

Foreign-Added Share in Gross Exports 1995, 2000, 2005 and 2008-2011

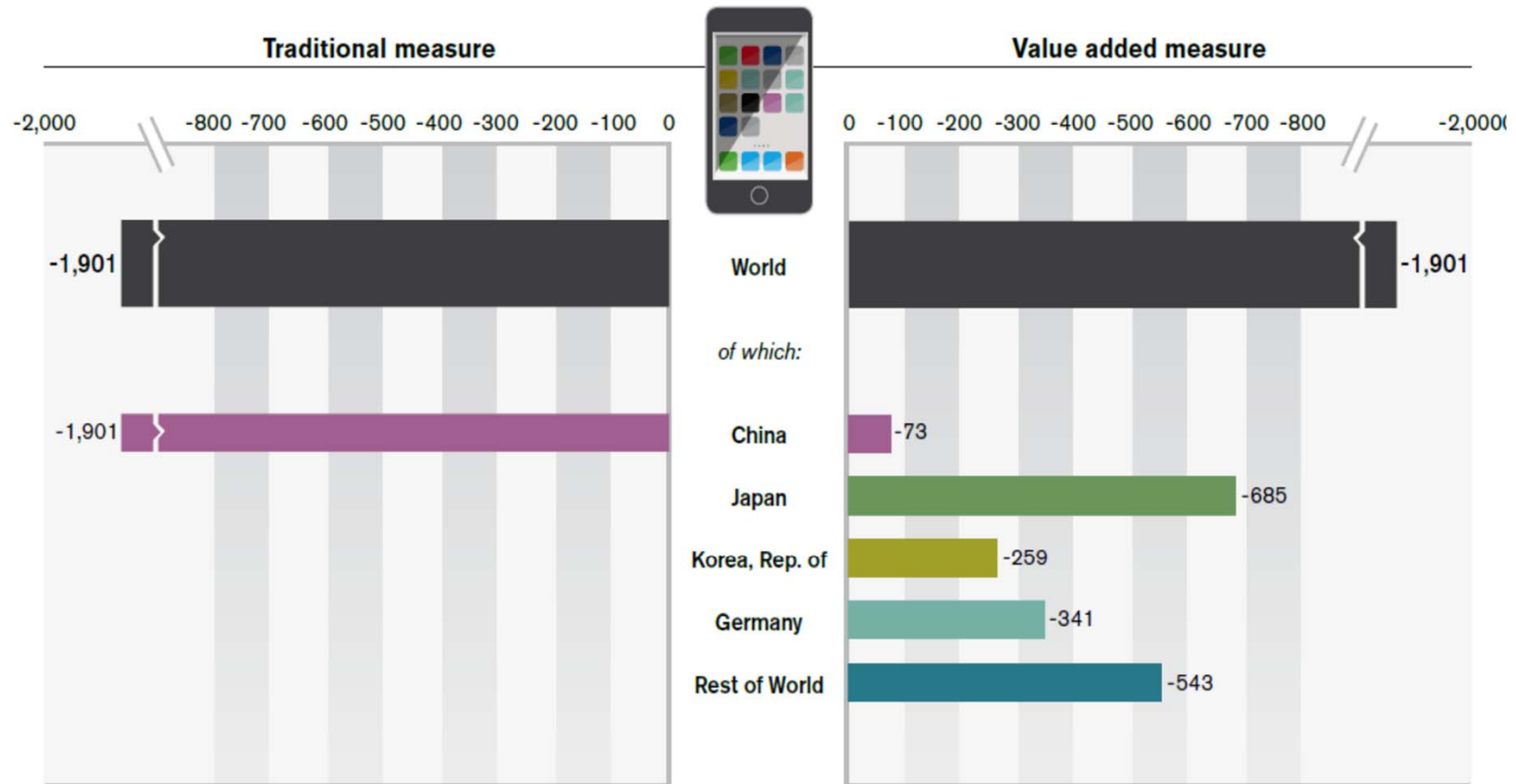


Source: ESCAP calculation based on OECD Trade in Value-Added (TIVA) data (accessed August 2016). Data are only available for 1995, 2000, 2005 and 2008-2011. The Asia-Pacific category excludes several economies for which data are unavailable.

Source: ESCAP 2016

Implications for Trade Balances

2009 US trade balance in iPhones (in millions of US\$)



Source: Meng and Miroudot (2011).

Source: WTO-IDE/JETRO (2011): Trade Patterns and Global Value Chains in East Asia

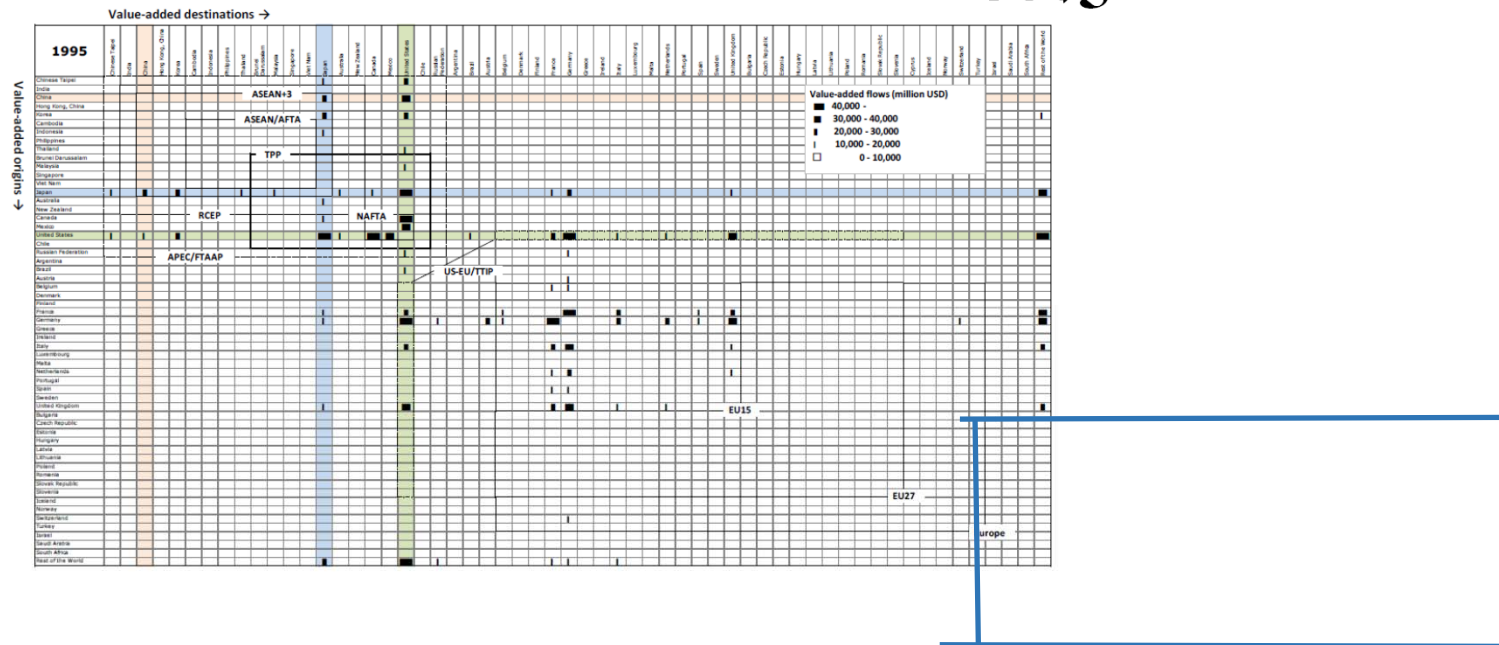
Insights from New Databases (2)

World Input Output Database (WIOD)

- Aims to track input-output relationships between industries and across countries
 - Allows “mapping” of value chains
 - Country coverage not yet complete
- Key insight from WIOD Database (Richard Baldwin): international supply chains are *not* global, they are predominantly regional, concentrated within three regional blocs
 - “Factory Asia” (dominated by China and Japan)
 - “Factory Europe” (dominated by Germany)
 - “Factory North America” (dominated by USA)
- Four dominant economies in these “factories” account for 60% of world manufacturing output and dominant share of intermediate inputs
- Germany, USA and Japan function as “headquarter economies” with advanced technology and high wages
- Supply chain trade has been shifting heavily toward Factory Asia, especially China

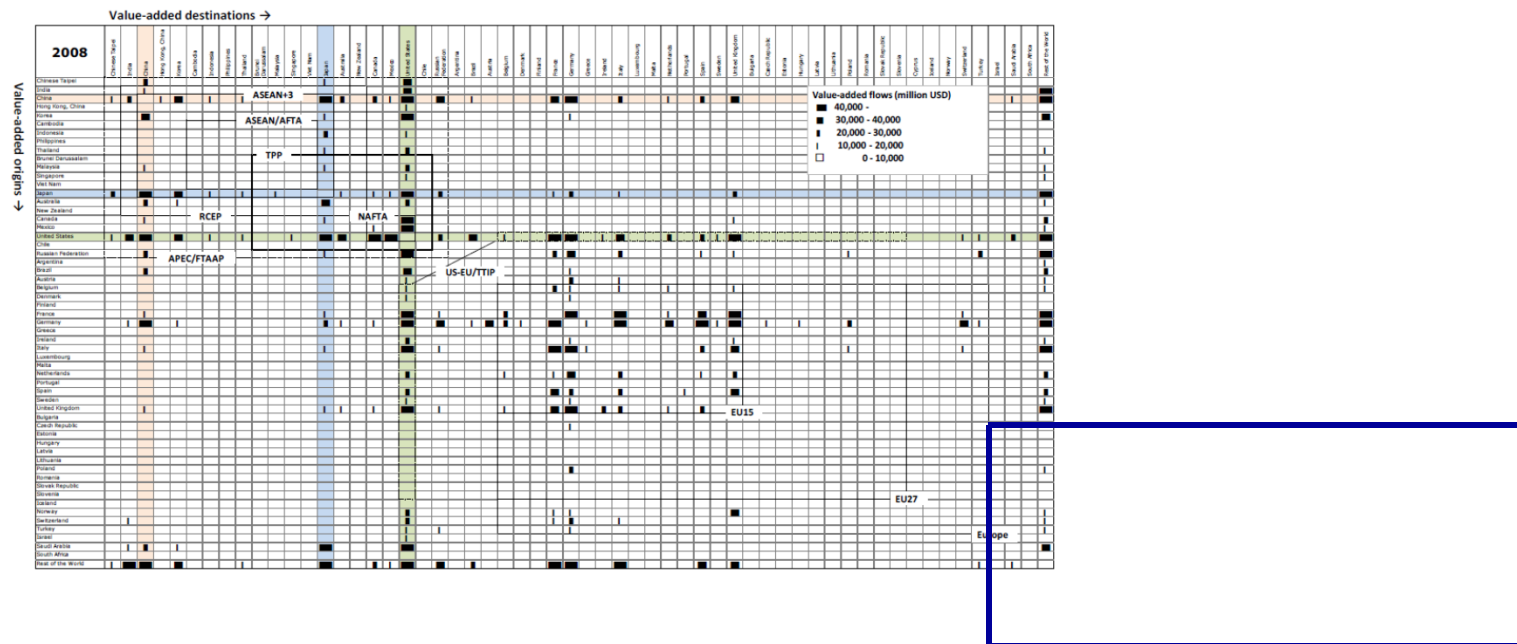
Value chains have changed dramatically in scale, scope....

Trade in Value-Added from the Regional Perspective 1995



Source: Escaith and Inomata 2016

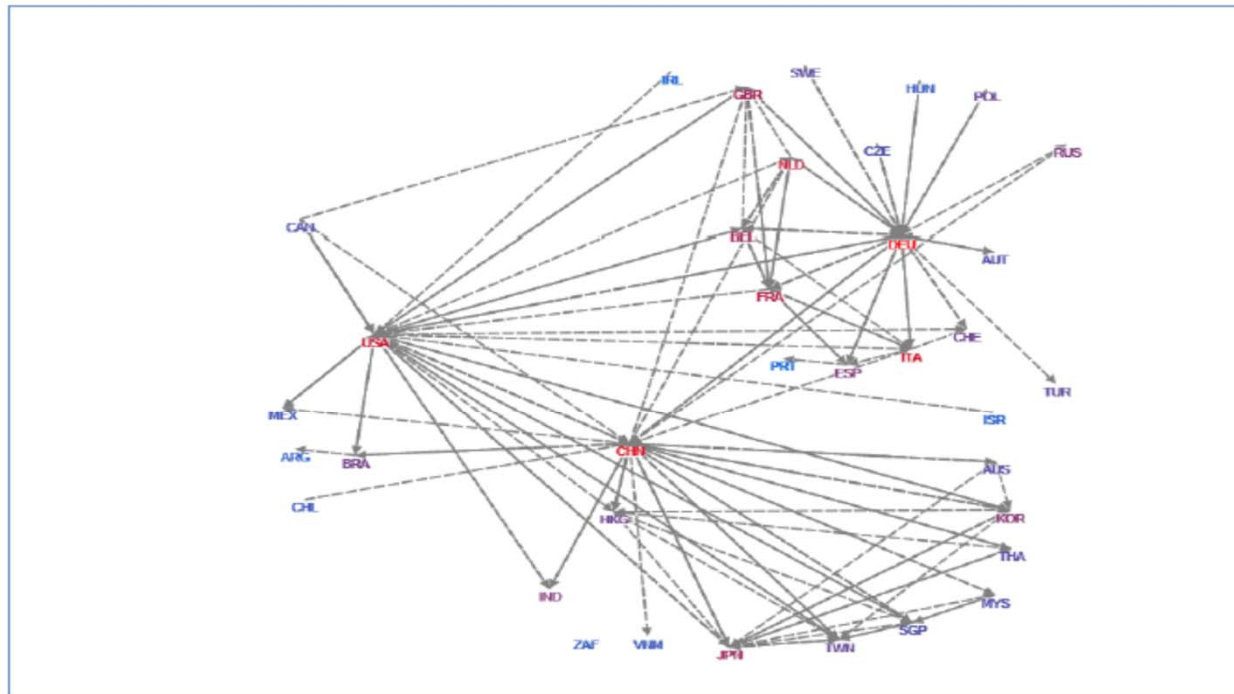
Trade in Value-Added from the Regional Perspective 2008



Source: Escaith and Inomata 2016

...and in configuration, both globally...

Networks of Trade in Intermediate Inputs 2011

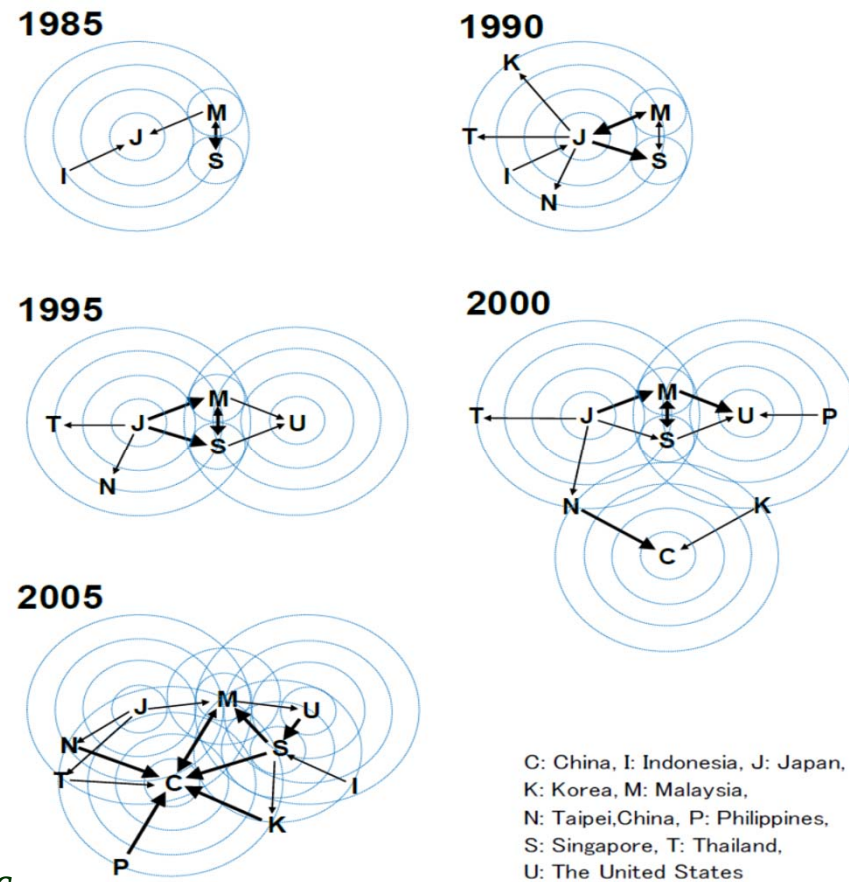


Note: Graph based on the 62 OECD–WTO TiVA economies and the value of their bilateral gross trade flows. The figure shows only the most important flows. The color coding indicates the node's centrality, ascending from blue to red.
Source: Based on COMTRADE data, excluding oil.

Source: Escaith and Inomata 2016

...and regionally

Evolution of Regional Supply Chains in the Asia-Pacific, 1985-2005



Source: Escaith and Inomata 2016

Features of the Three Regional Supply Chain Blocs

“Factory Europe” and “Factory North America”

- “Hub and Spoke patterns centred on “head quarter economies” as hubs

“Factory Asia”

- More complex “production network” pattern, wider extra-regional connections (especially with “Factory North America”)
 - Japan acts as a “headquarter economy” but with declining influence
 - China resembles a “headquarter economy” on the sales side (numerous import clients), but resembles a “factory economy” on the sourcing side (sources mainly from Japan, USA, Germany and Korea)
 - Korea mixes characteristics of both “headquarter” and “factory” economy
- Heavily dependent on North America and Europe as markets for finished goods
- Trade flows mainly across water (by sea and air)

Key Role of Logistics in Supply Chain Developments

Logistics becomes key to supply chain competitiveness

- Often outsourced to 3PLs
- Supply chains efficiency depend on efficiency of links between supply chain units
 - Essential to ensure inputs reach intended location within a specified time range
 - “containers embedded in value chains are simultaneously transport, storage, and management units”
 - Linking production, distribution and consumption in cost-effective manner

Meeting the Needs of Supply Chains: Some Logistics Challenges for Maritime Transport

- Ensuring schedule reliability
 - Will require careful integration of levels of feederisation
 - Provide flexibility by developing multiple networks
- Limitations on port facilities, bottlenecks, disruptions threaten supply chain sustainability
 - Pressure on multimodal integration to serve hinterland
 - Can trigger new developments to increase flexibility
 - Multi-port regional gateways
 - Move container sorting further inland (away from ports) using rail or barge links
- Repositioning of empty containers an ongoing problem