

Lecture 1: Global Production Introduction

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Introduction to the development of Globalization

Three major developments in the world economy in the last three decades:

1. Information and communication technology (ICT) revolution
2. Deepening of trade liberalization and continuing transportation cost reduction
3. Political developments expanding the reach of globalization

ICT Revolution

- ▶ Information and communication technology (ICT) revolution
 - Processing power and memory capacity of computers
 - Cost of transmitting information over an optical network
 - 5G technology and IoT(Internet of things)

Devices in 80s, 90s,00s



(a) 80s



(b) 90s



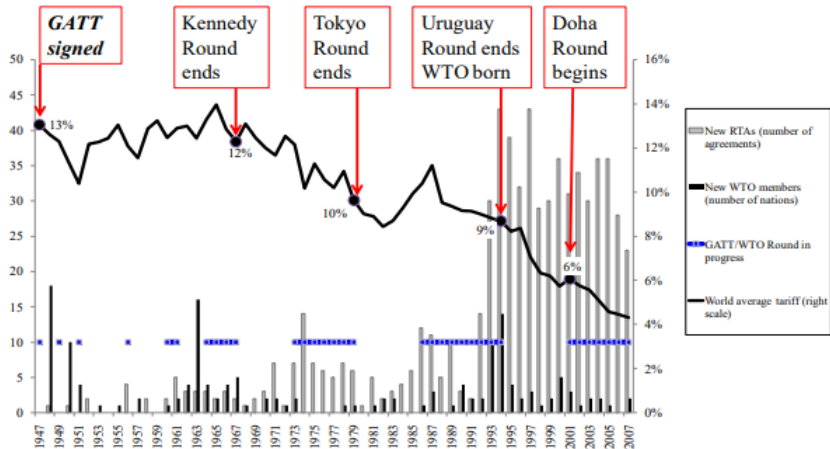
(c) 00s

Devices Nowadays



Falling Trade Costs

- ▶ Deepening trade liberalization and falling transportation costs
 - EU, NAFTA, Mercosur, ASEAN FTA, China's WTO accession, etc



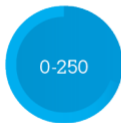
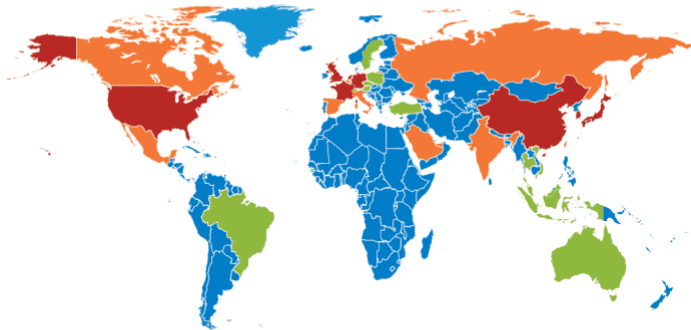
Sources: RTAs: WTO online databases & Hofbauer-Schott RTA database; tariffs: Clemenson and Williamson (2004) up to 1993, then World DataBank (weighted tariffs: all products)

Trade and Economic Growth



World Trade Map: Merchandise

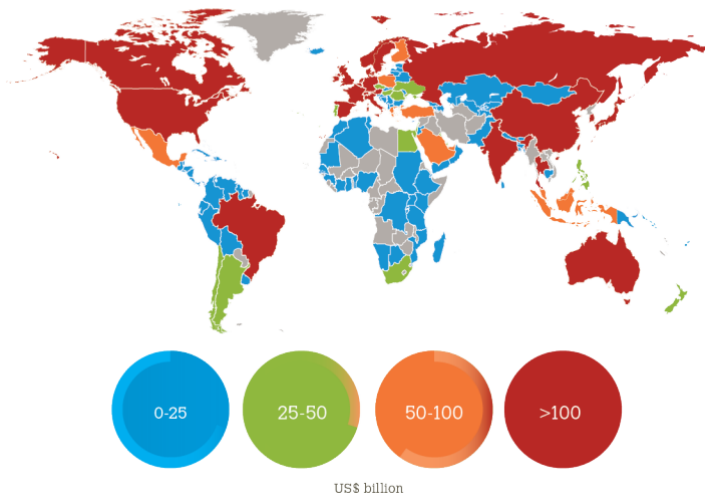
Economies by size of merchandise trade, 2014



US\$ billion

World Trade Map: Service

Economies by size of trade in commercial services, 2014

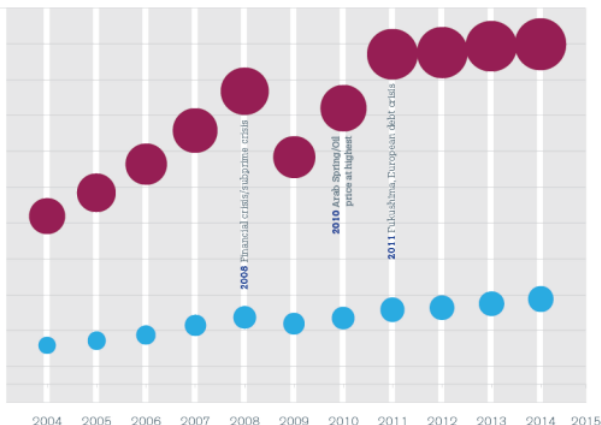


Offshoring Services also raising quickly

- ▶ India's customer service call centers
- ▶ Reading X-rays
- ▶ Software development
- ▶ Tax form preparation

Goods V.S. Services

- ▶ China's accession to the WTO (China shock) in December 2001 significantly contributed to increasing world trade from 2002 to 2008
- ▶ The 2008 financial crisis led to a global recession between 2008 and 2011

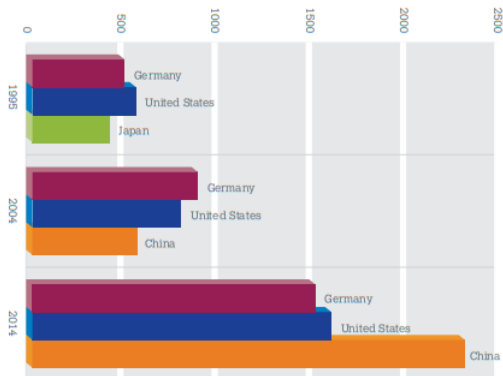


Some Data Sources

- ▶ <https://oec.world/en/profile/world/wld>
- ▶ <https://data.wto.org/>
- ▶ <https://data.oecd.org/>
- ▶ Each country's Bureau of Statistics

Political Developments

- ▶ Western world expanding (1980~2010)
- ▶ China opening and rising up (2000~2020)



An Implication: Rise of Global Value Chains

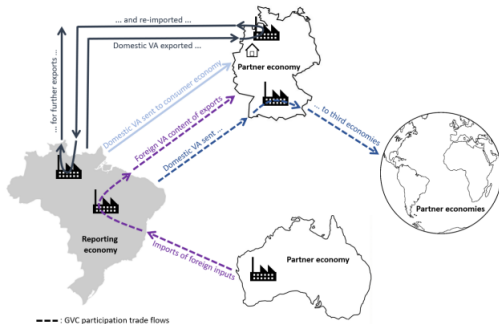
- ▶ Gradual disintegration of production processes across borders
- ▶ “Made in” labels → “Designed in”, “Assembled in”
- ▶ Popular words
 - “slicing of the value chain”
 - “disintegration of production”
 - “unbundling”
 - “offshoring”
 - “flattening of the world”

Trends in the GVCs

- ▶ In the past two decades, countries are in a geographically more diverse manufacturing base.
- ▶ In 2011, 49% of world trade in goods and services took place within GVCs, up from 36% in 1995.
- ▶ The tendency of countries to specialize in particular stages of a good's production (known as vertical specialization), from FDI, has created new trade opportunities, especially for small developing countries.
 - importing more foreign inputs to produce final goods and services. (Backward GVC participation)
- ▶ East Asian economies have increased significantly the share of imported components in their exports.

Value-added Components of Gross Exports

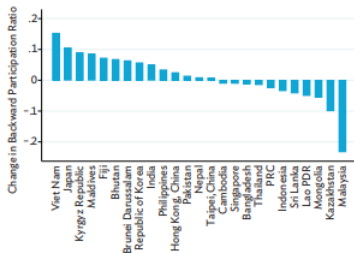
- ▶ Domestic value added sent to consumer economy
 - (consumed by importing country)
- ▶ Domestic value added sent to third economies
 - (intermediate input)
- ▶ Domestic value added re-imported in the economy
 - (embodied in other intermediates)
- ▶ Foreign value-added content of exports
 - (“vertical specialization”)



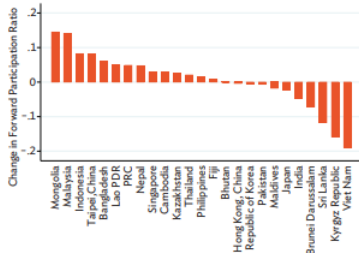
Changes in GVC Participation (2000~2017)

- China: Forward GVC ratio \uparrow Backward GVC ratio \downarrow

Figure 3.1.5: Changes in Participation Ratios over Time, 2000–2017

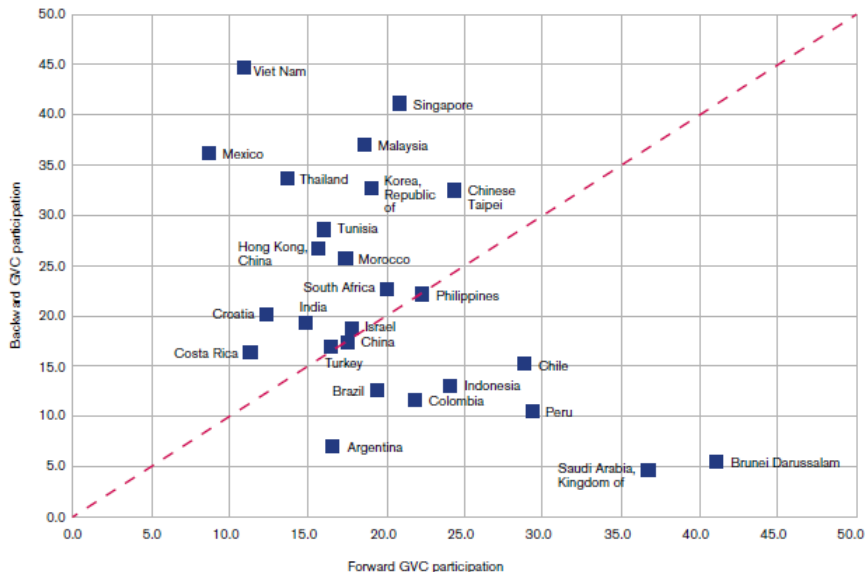


A. Backward Participation



B. Forward Participation

Selected countries GVC participation in 2015



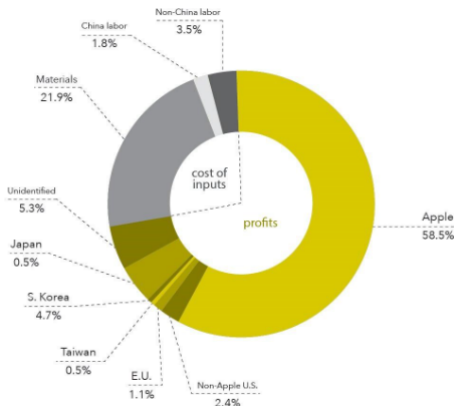
Source: OECD TiVA database.

Example: Worldwide Suppliers for iPhone

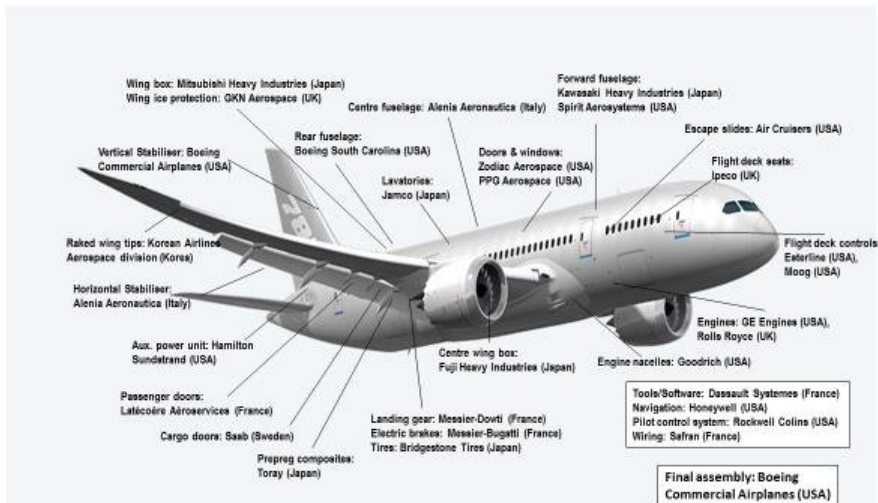


Profit distribution for iPhone

- Kenneth L. Kraemer, Greg Linden and Jason Dedrick (2011) analyze the geographical distribution of the gross profits received by first-tier suppliers of iPhone 4.



Example: Fragmentation of production for Boeing



Global Production: Different Types of Fragmentation

- ▶ Two key organizational decisions of firms:
 - Location of different stages in the value chain
 - Extent of control that firms exert over these different production stages

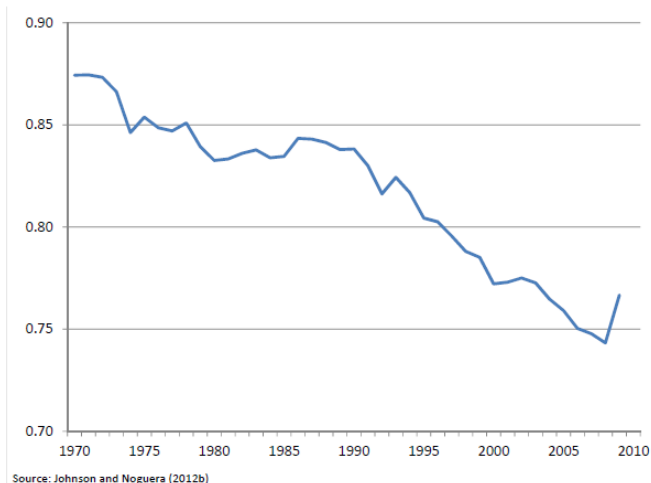
	Within-Firm	Arm's-Length
Domestic	Domestic Insourcing	Domestic Outsourcing
Foreign	Foreign Insourcing (intra-firm trade)	Foreign Outsourcing (arm's-length trade)

Quantitative Exercise

- ▶ Goal: Quantify the geography of worldwide production
 - Allocating value added along the value chain across borders;
 - Which country's value added is used as an input in generating a country's value added?
- ▶ Challenge: International trade on data is recorded on a gross output (sales) basis
- ▶ Recent Approach: Construction of World Input Output Tables (WIOD project)
 - Combines International Trade Statistics + Various Countries Input-Output Tables + Assumptions
 - Our RIGVC index

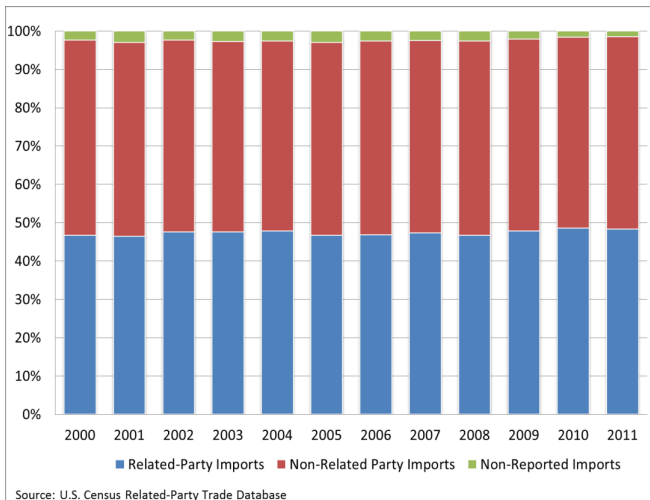
Some Empirical Evidence

- ▶ Declining valued-added share in exports demonstrates rise of GVCs
 - The lower is this measure, the larger is the value of imported inputs embodied in exports



Intra-firm Trade Flows

- ▶ Intra-firm transactions are remarkably prevalent in U.S. trade (close to 50% of imports and around 30% of exports)

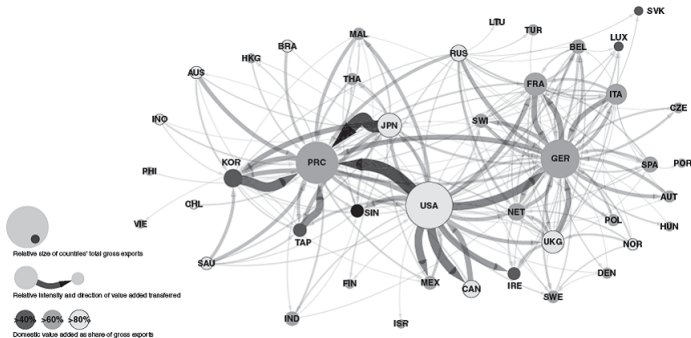


- ▶ Predominant intra-firm transactions are in U.S. trade.
 - in 2011, \$1,056.2 billion for intra-firm imports of goods (48.3% of total)
- ▶ Share of U.S. intra-firm imports varies widely across countries.
- ▶ Share of intra-firm trade varies widely depending on the type of product being imported.
 - Simple goods versus Complex goods

Contracts in International Trade

Key Characteristic of Global Production Networks:

- ▶ Firms necessarily entail intensive contracting between parties located in different countries and thus subject to distinct legal systems.
 - For domestic commercial transactions, we have a unified and powerful legal system to secure the business activities.
 - Cross-border exchange of goods is hard to be governed by a contractual safeguards



Note: Based on OECD-WTO TiVA database, accessed 5 October 2013.

Source: Authors' calculations.

Natural Difficulty in Contracting

1. Which country's laws are applicable to the contract being signed?
 - China V.S. U.S.A.
2. Judges may be reluctant to rule with regard to a contract dispute involving residents of foreign countries
 - An importer local court will favor domestic firms not foreigners
3. Limited enforcement of remedies in the courts verdict.
 - Hard to execute the punishment or penalties for foreign firms
4. Detrimental effects of imperfect contract enforcement are particularly acute for transactions involving intermediate inputs
 - longer time lags between order and delivery
 - more relationship-specific investments and other sources of lock-in

Firm Responses to Contractual Insecurity

- ▶ Two key organizational decisions of firms:
 1. Location of different stages in the value chain
 - R&D and product development, parts and components production, assembly, and so on
 2. Extent of control that firms exert over these different production stages
 - Firm insourcing or outsourcing

Empirical Evidence of Contracts and Specialization

- ▶ Anderson and Marcoullier (2002) show that, controlling for standard gravity determinants of trade flows, countries with weak contracting institutions tend to import less from their trading partners (relative to the United States)
- ▶ Nunn (2007) use the industry's intermediate inputs to construct relationship-specific measure for contract intensity and find that
 - Countries with better contracting environments produce and export more contract intensive goods, on average

Next Time

- ▶ Review the Heterogenous firm model (Melitz)
- ▶ Use benchmark model to show the decisions of offshoring