

# GLOBAL VALUE CHAIN

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# Index

1. Definition
  - 1.1 Globalization
  - 1.2 GVC
2. History
3. GVCs today and their archetypes
4. Future
5. How should an Economy prepare
6. Summary

# 1.1 Definition of globalization

- ▶ The process of interaction and integration among people, companies, and governments worldwide
- ▶ Is considered by some as a form of capitalist expansion which entails the integration of local and national economies into a global, unregulated market economy
- ▶ Has grown due to advances in transportation and communication technology

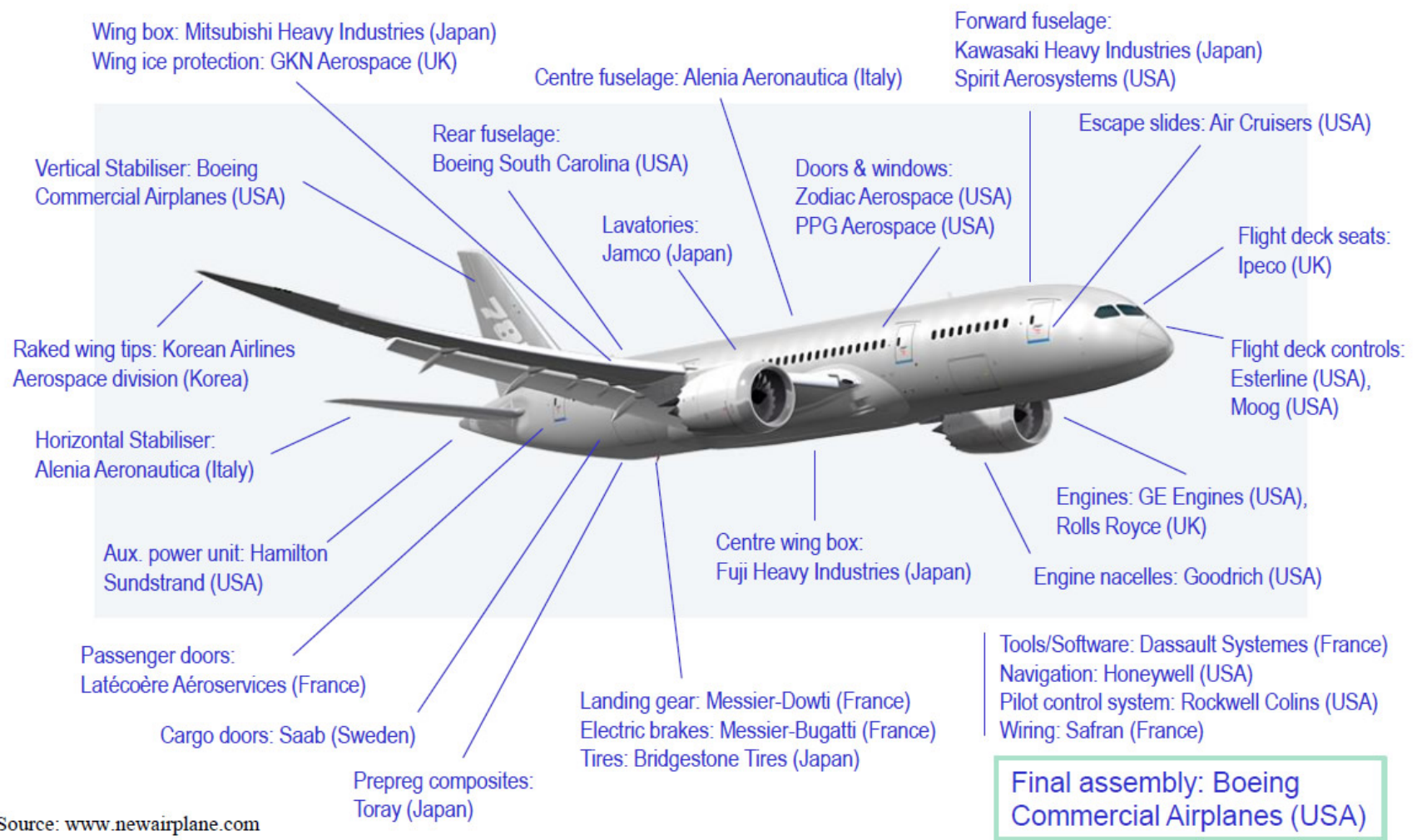


## 1.2 Definition of global value chain

- ▶ Includes all the activities and inputs used to create a final good or service
- ▶ Each one is the product of millions of decisions made by individual businesses about which global growth opportunities to pursue, how to organize operations, which production steps they will conduct themselves, and the extent to which they will rely on suppliers
- ▶ These decisions shape the movement and volume of global flows of goods, services, finance, data, and even people



# Fragmentation of production: the example of the Boeing 787 Dreamliner



Source: [www.newairplane.com](http://www.newairplane.com)

## 2. History

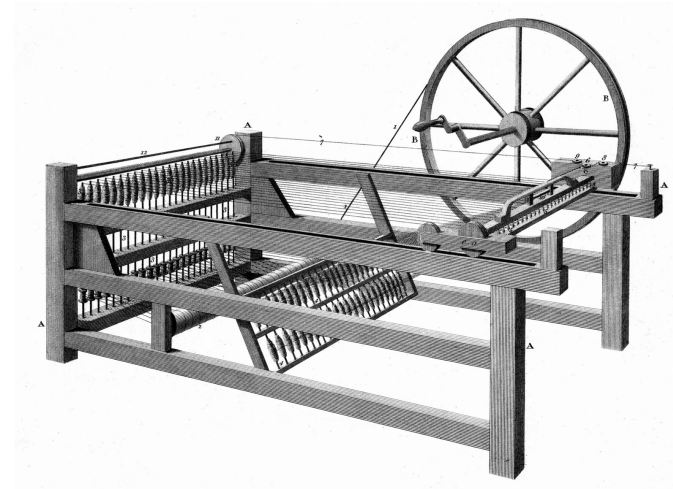
- ▶ Pre-globalization world
  - ▶ Consumption and production forced together
- ▶ No global value chains or global interactions
- ▶ Industrial Revolution (starting 18th century)



# First Unbundling

„Steam made it possible, scale economies made it profitable“

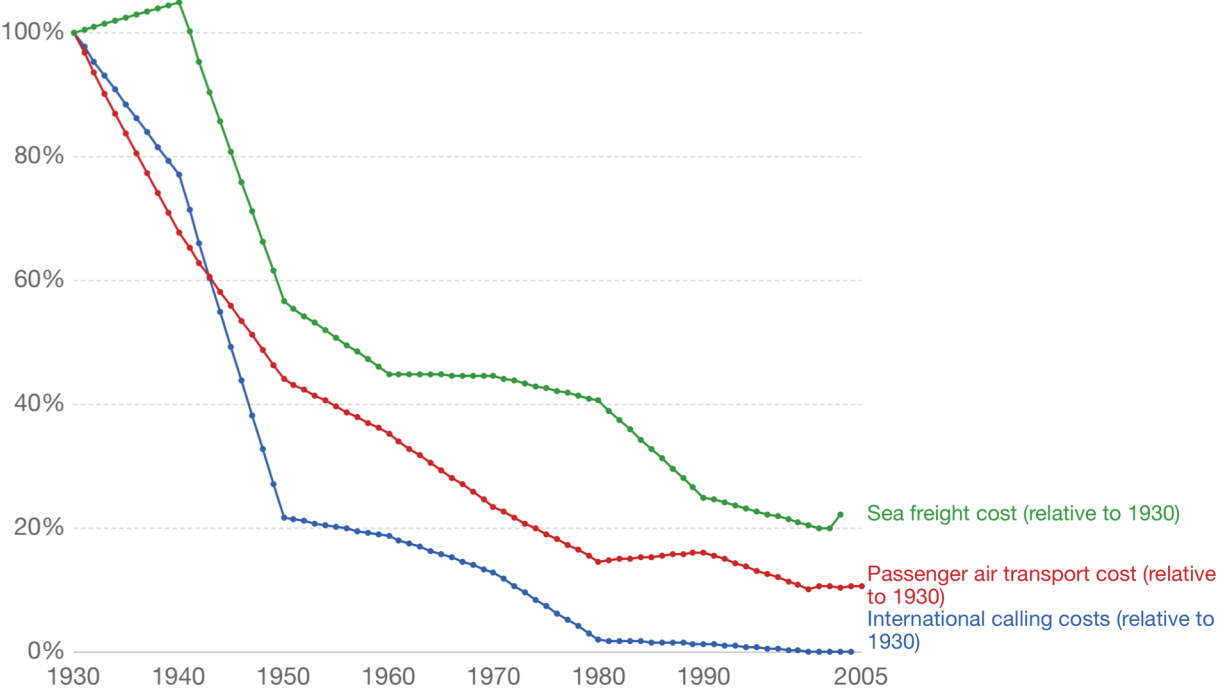
- ▶ Steam Revolution
  - ▶ Improvement of production and transportation technology
    - ▶ Spinning jenny
  - ▶ Seperate production and consumption
    - ▶ Decrease in transportation costs



- ▶ Scale economies and comparative advantage made separation possible
  - ▶ but: increasing coordinating and communication costs

### The decline of transport and communication costs relative to 1930

Sea freight corresponds to average international freight charges per tonne. Passenger air transport corresponds to average airline revenue per passenger mile until 2000 spliced to US import air passenger fares afterwards. International calls correspond to cost of a three-minute call from New York to London.



Source: Transaction Costs - OECD Economic Outlook (2007)

OurWorldInData.org/international-trade · CC BY



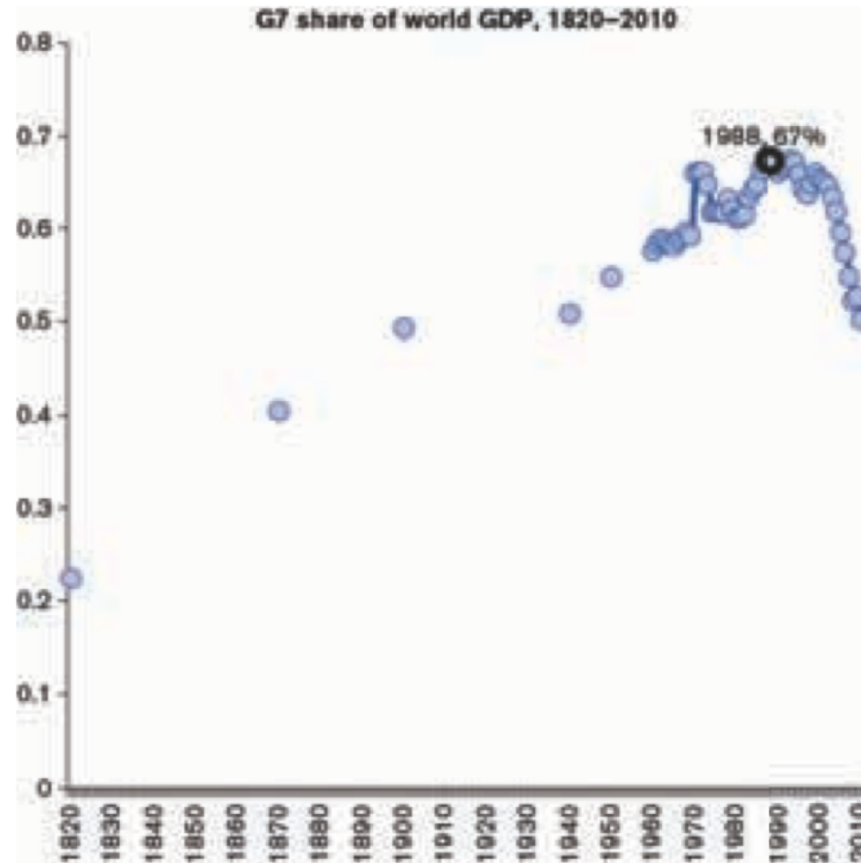
# Second Unbundling

„Information and communication technology (ICT) made it possible, wage differences made it profitable“

- ▶ ICT Revolution
  - ▶ Decrease in coordination and communication costs:
    - ▶ Positive impact on global value chains and
  - ▶ Example: Internet
    - ▶ Firms and countries can specialize in specific parts of different industry value chains

# Second Unbundling

- ▶ Wage differences leads to allocation of income
  - ▶ Growth in emerging markets
- ▶ Political interventions for trade and investment liberalization





## Industrial Revolution enabled Global Value Chains

„Technological change has allowed a fragmentation of production in the past two decades that was not possible before.“

# 3. GVC today and their archetypes

▶ Global value chains are grouped into six archetypes based on their inputs, trade intensity, and country participation.

- ▶ Global innovations
- ▶ Labor-intensive goods
- ▶ Regional processing
- ▶ Resource-intensive goods
- ▶ Labor-intensive services
- ▶ Knowledge-intensive services



# Global innovations

- ▶ Industries including automotive, computers and electronics, and machinery have given rise to the most valuable, highly traded, and knowledge-intensive of all goods-producing value chains
- ▶ They account for 13 percent of gross output but 35 percent of trade. just over half of all trade within these value chains is in intermediate goods rather than finished products
- ▶ These are the most valuable, knowledge-intensive, and trade- intensive value chains



# Labor-intensive goods

- ▶ These value chains, including textiles and apparel, toys, shoes, and furniture, are highly labor- and trade-intensive.
- ▶ More than two-thirds of income goes to labor, most of which is low-skill
- ▶ Given their light weight, the products in these industries are highly tradable, 28 percent of global output is exported
- ▶ Production shifted to developing countries in the last wave of globalization, and those countries today account for 62 percent of trade, a larger share than in any other archetype
- ▶ Value chains represent only 3 percent of global gross output and employ only 3 percent of the global workforce



# Regional processing

- ▶ Industries in this archetype include fabricated metals; rubber and plastics; glass, cement, and ceramics; and food and beverage
- ▶ These value chains use relatively few intermediate goods
- ▶ With the exception of food and beverage, more than two-thirds of the output they produce becomes intermediate input feeding into other value chains, particularly global innovations
- ▶ These value chains account for 9 percent of global gross output and employ 169 million people, or 5 percent of the global labor force



# Resource-intensive goods

- ▶ This archetype includes agriculture, mining, energy, and basic metals
- ▶ generate \$20 trillion of gross output annually, nearly as much as global innovations value chains
- ▶ Much of this output goes to other value chains as intermediate input
- ▶ Countries around the world participate; 19 countries account for 75 percent of resource-intensive goods exports
- ▶ While agriculture employs almost 870 million people globally, the other value chains in this archetype employ only 49 million people in total, or 1.5 percent of the global workforce
- ▶ contribute 11 percent of global value added, the highest share among all goods-producing value chains





# Labor-intensive services:

- ▶ These value chains include retail and wholesale, transportation and storage, and healthcare
- ▶ trade intensity is low, but trade is growing faster than in any other archetype
- ▶ These value chains are the largest job creators after agriculture, employing more than 740 million people (23 percent of the global workforce), two-thirds of whom are in wholesale and retail trade



# Knowledge-intensive services

- ▶ These high-value industries include professional services, financial intermediation, and IT services
- ▶ More than half of the people employed in knowledge-intensive services have bachelor's degrees or above
- ▶ These value chains have lower trade intensity than goods-producing industries
- ▶ Just 21 percent of all exports in this category come from developing economies, the lowest share among all types of value chains





## 4. Future of GVC

- ▶ Declining Importance of goods producing
  - ▶ Trade intensity in goods producing value chains has fallen
  - ▶ Share of output moving across the world's borders fallen from 28,1% in 2007 to 22,5% in 2017
  - ▶ This does not signal the end of globalization
  - ▶ Rather reflects the development of China and other emerging countries consuming more of what they produce



# Goods-producing value chains have grown less trade-intensive

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# Services play growing and undervalued role

- ▶ Grow more than 60% faster than goods trade
- ▶ Role of services is obscured by statistics
  - ▶ One-third of the value that goes into traded manufactured goods is created by services
  - ▶ The contribution of R&D, design and branding are not captured in trade statistics
  - ▶ Do not track soaring cross-border flows of free digital services (such as wikipedia and youtube)
- ▶ These three aspects are estimated to create around \$8.3 trillion in value annually



# Trade based on labor-cost arbitrage going down

- ▶ In the 1990s many offshoring decisions were based on labor costs
- ▶ Today only 18% of goods trade is based on labor cost arbitrage
- ▶ Important reasons are access to skilled labor, natural resources or infrastructure.
- ▶ This process also reflects rising wages in developing countries
- ▶ In the future AI and automation may amplify this trend



# GVCs are growing more knowledge-intensive

- ▶ Spending on R&D and intangible assets (brands, software, intellectual property) is growing as a share of revenue
- ▶ This trend favors countries with a high skilled labor force, strong R&D and innovation capabilities and robust intellectual property protection
- ▶ Value creation is shifting to upstream ( R&D; design) and downstream ( marketing, distribution) activities



# Value chains become more regional

- ▶ Long-haul trade crisscrossing oceans was getting more prevalent
- ▶ This trend has begun to reverse in recent years
- ▶ Regionalization is most apparent in global innovation value chains
- ▶ In the future it could accelerate in other value chains as well ( as the importance of labor costs is decreasing)





# Three forces explain these changes

1. Emerging markets share of consumption has risen  
→ consuming more of what they produce
2. Emerging economies are building more comprehensive domestic supply chains.
3. GVCs reshaped by cross-border data flows and new technologie



# Future of Technologies

- ▶ In the past digital technologies accelerated trade by reducing transaction costs
- ▶ Next generation of technologies will have more complex, multidimensional effects
- ▶ Possibly dampen trade in goods while fueling further growth in services trade



## 5. How should an Economy prepare



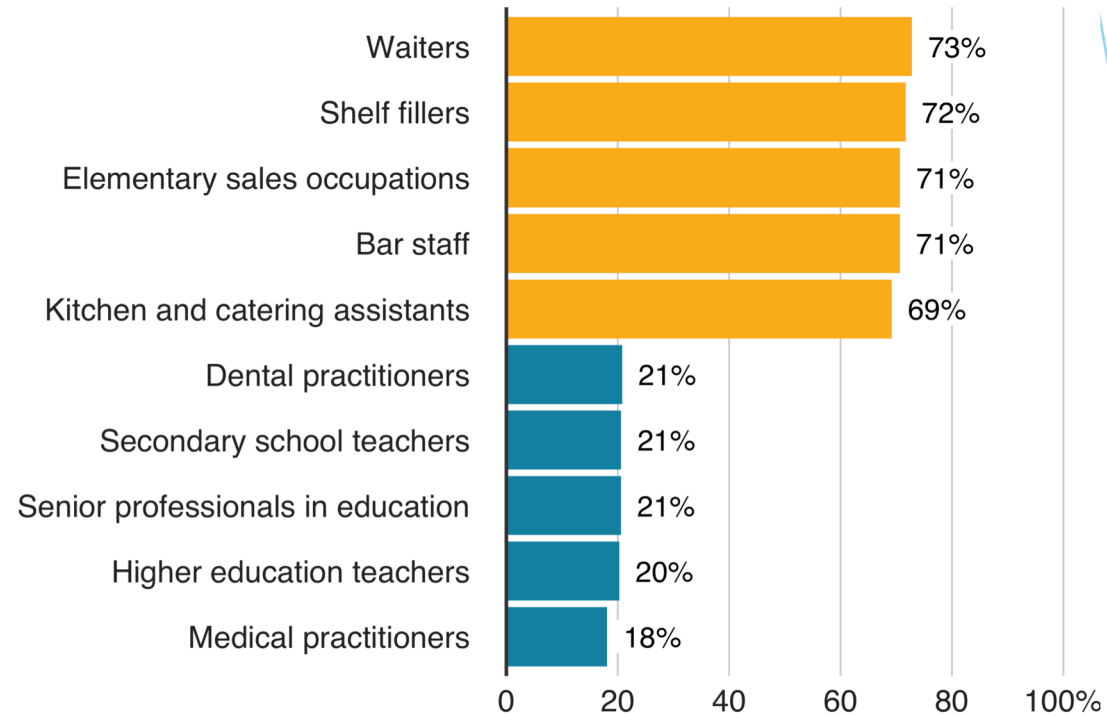
# A world of services

- ▶ Clear the way for services
  - ▶ As merchandise goods become less labour intensive, high skilled services do not
- ▶ Therefore the infrastructure for services needs to be maintained and improved -> gain speed to market

- ▶ Stay open and competitive!
  - ▶ New ideas and new people can be absorbed
- ▶ Protectionism will not bring jobs back, as automation replaces labour
  - ▶ Not all service jobs are „safe“

## Jobs at risk from automation

Highest and lowest probability



Source: Office for National Statistics

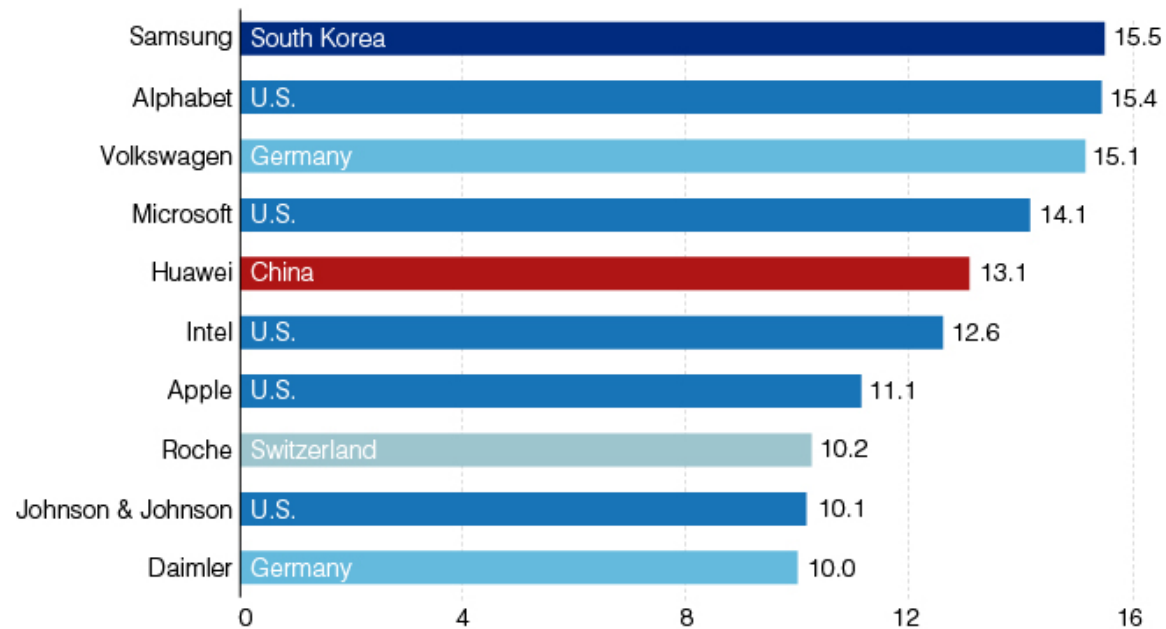
BBC

# Knowledge based economy

- ▶ To gain and maintain a comparative advantage in „safe“ knowledge intensive services, education and R&D spending has to be increased
- ▶ Furthermore knowledge has to be protected with intellectual property protection and more efficient cyber security

## Top Ten Global R&D Investors

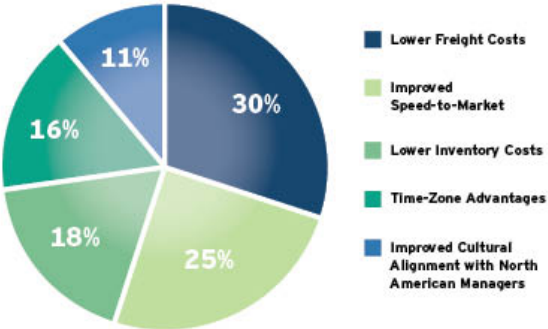
Unit: Billion U.S. dollars



Source: 2018 EU Industrial R&D Investment Scoreboard

# Nearshoring

- ▶ With speed to market becoming more and more relevant, getting production near to market is one scenario
  - ▶ Although due to automation not all jobs will be back
  - ▶ Decrease logistics costs and improve availability
- ▶ Another solution: Specialize in low tradeable goods with a regional focus



Source: Alix Partners

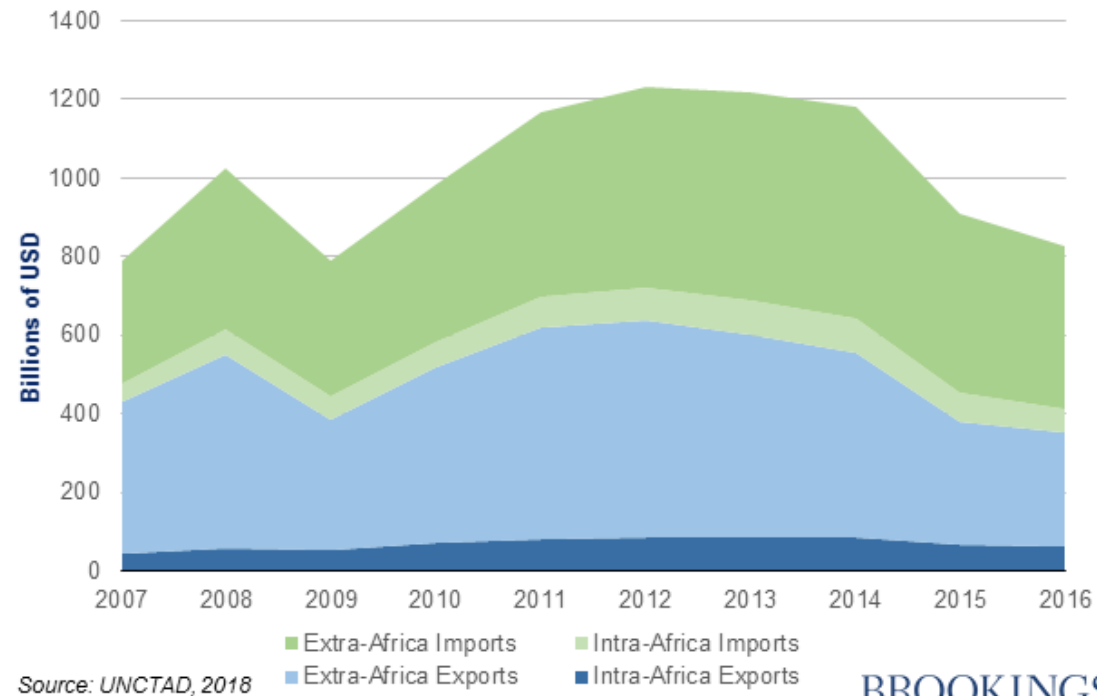
# Understand the internet

- ▶ As the world of services and the R&D rely heavily on digital phenomena policymakers need to understand how the internet works
- ▶ This is needed for effective regulation, allowing a smooth flow of information across borders
- ▶ And to protect privacy



# Diversify development

- ▶ Especially developing countries will not have the same success with low labour costs that China had
- ▶ They have to diversify their efforts
- ▶ An inter-regional trade model with harmonized regulations between countries allows flows of knowledge and goods





# Summary

- ▶ A global value chain is the entire process of creating a final service or good but with (intermediate) inputs from different regions and countries
- ▶ Prior to globalization there were no global interactions
- ▶ Scientific and political revolutions led to decrease of costs
- ▶ Six archetypes: Global innovations, labour intensive goods, regional processing, resource intensive goods, labour intensive services and knowledge intensive services
- ▶ Importance of producing goods is falling

## 6. Summary

- ▶ This does not mean end of GVC's or globalization!
- ▶ Instead services are making up a bigger share, but are still undervalued in statistics
- ▶ Focus on labour cost is becoming outdated, as automation becomes more practice
- ▶ To stay competitive countries and firms have to adjust to services
- ▶ Knowledge based services have to be promoted
- ▶ Policymakers have to improve infrastructure as nearshoring relies on speed to market

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