



## International Supply Chains and ASEAN Developing Economies

### Enhancing ASEAN Logistics Services Seminar

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ADB



INSTITUTE FOR SUPPLY CHAIN AND LOGISTICS





ASEAN-AUSTRALIA NEW ZEALAND FREE TRADE AREA (AANZFTA)  
ECONOMIC COOPERATION WORK PROGRAMME (ECWP)

**Outline of discussion**

- **An ASEAN story**
- Why logistics services?
  - *Trade and growth nexus*
  - *Well functioning supply chains are important for trade*
- Facilitating supply chain development
- The 4 I's for investment
- Managing risks and vulnerability in supply chains
- Key points



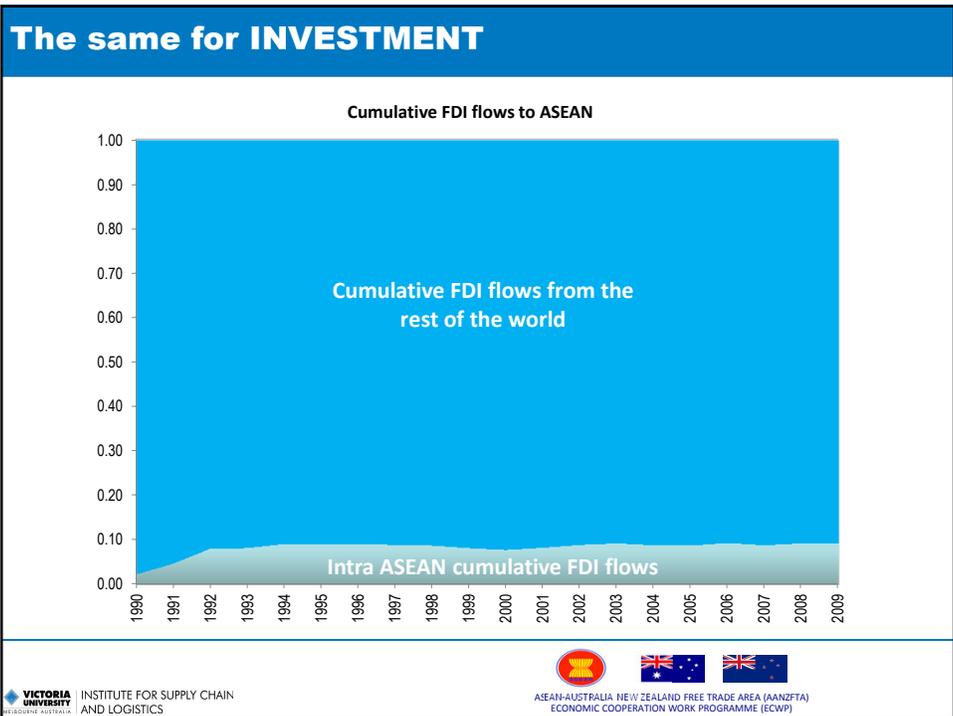
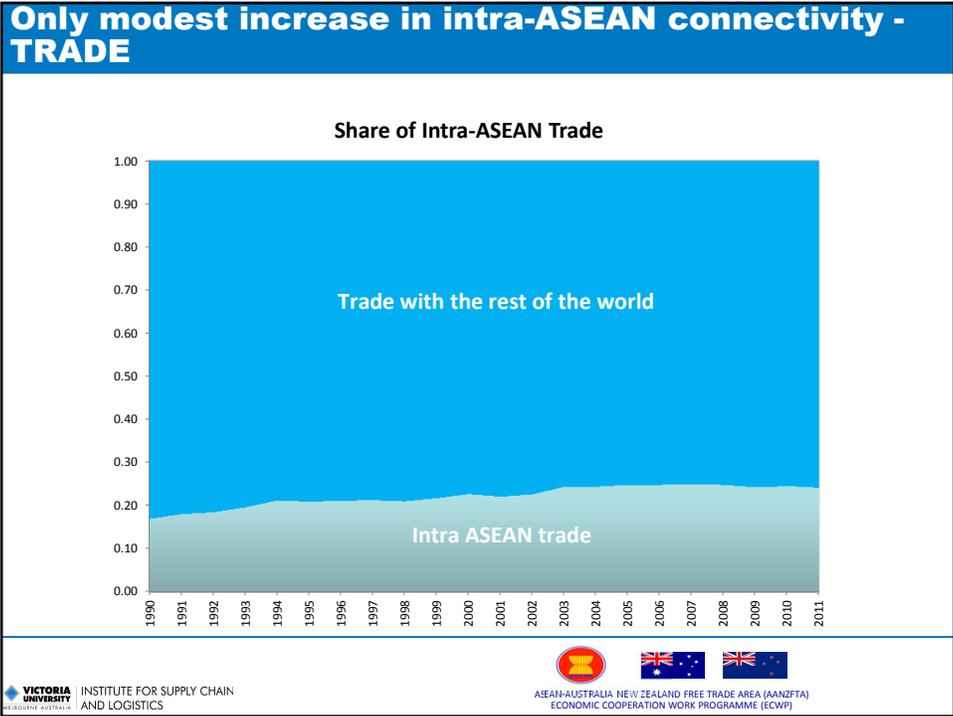
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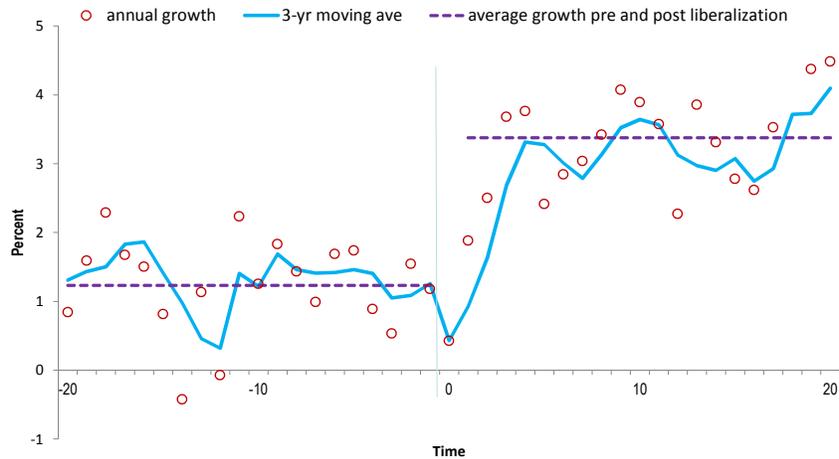


## In developing Asia...

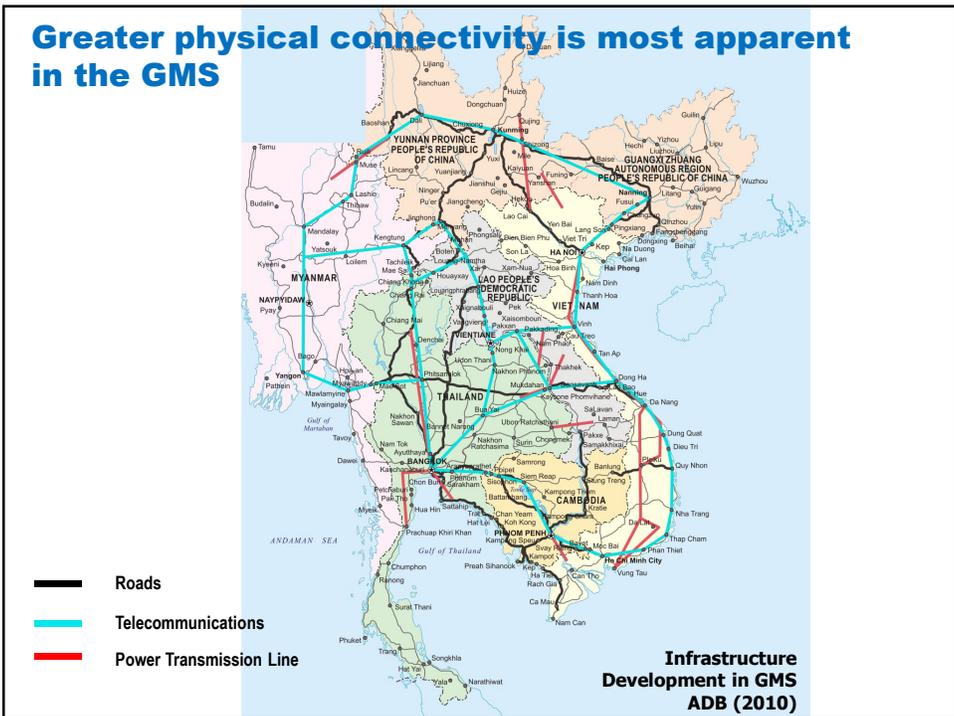
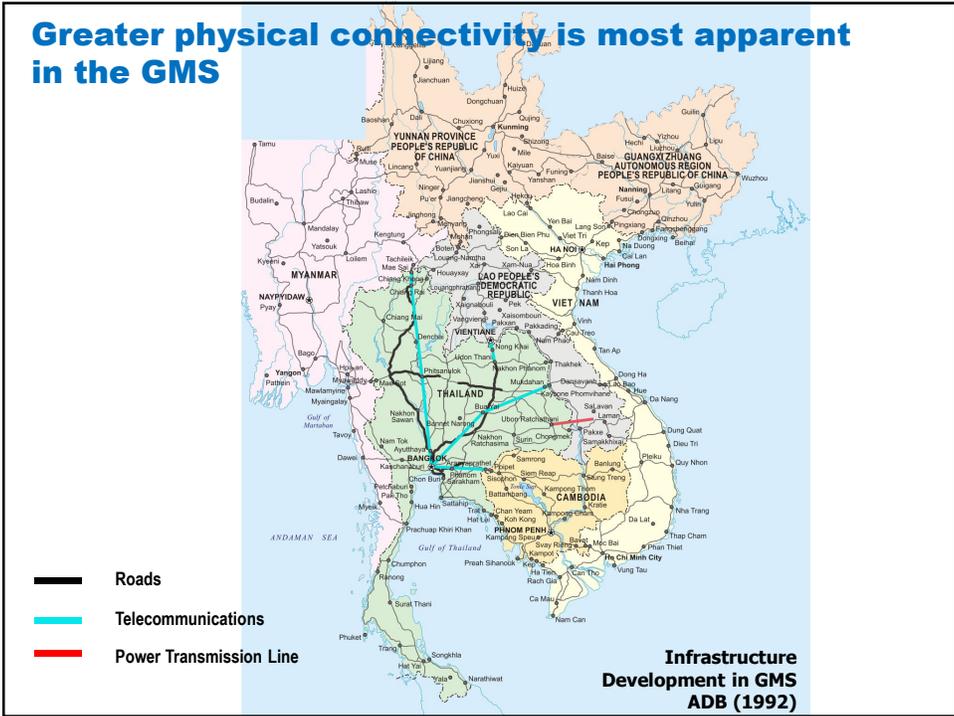
- Roughly 50% of developing Asia’s exports are intraregional
- Most intraregional trade appears to be intra-industry as well (esp. electronics, auto parts)
- Tripolar expansion of PRC, India and ASEAN expected to boost intraregional trade further

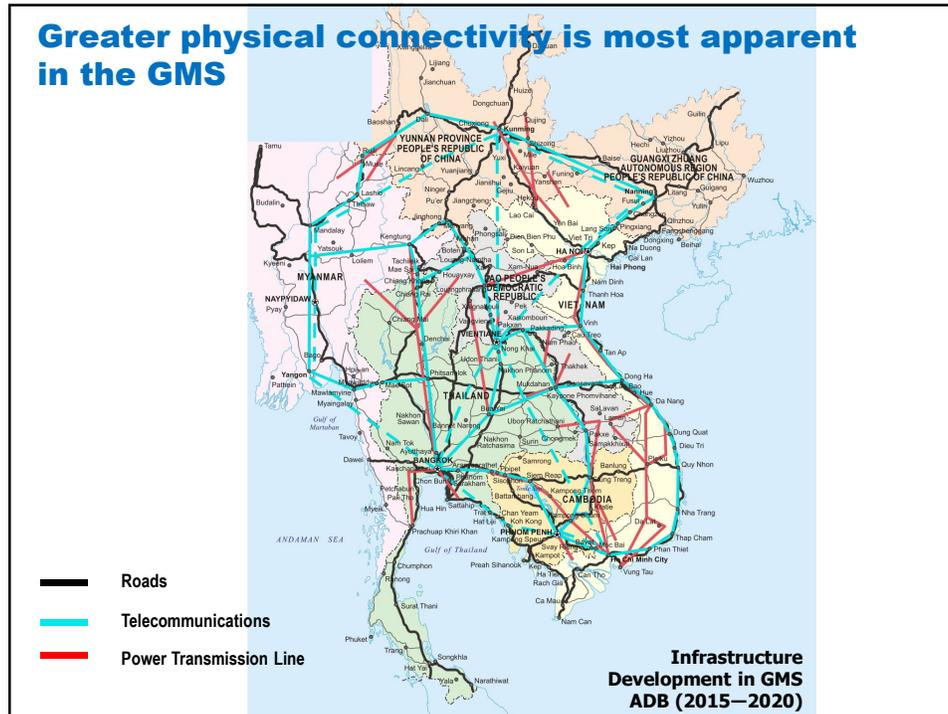
## The trade and growth nexus

### Openness and Growth -113 Economies



Source: ADB staff estimates from Penn World Tables 7.0, using the Wacziarg and Welch (2008) methodologies and classification





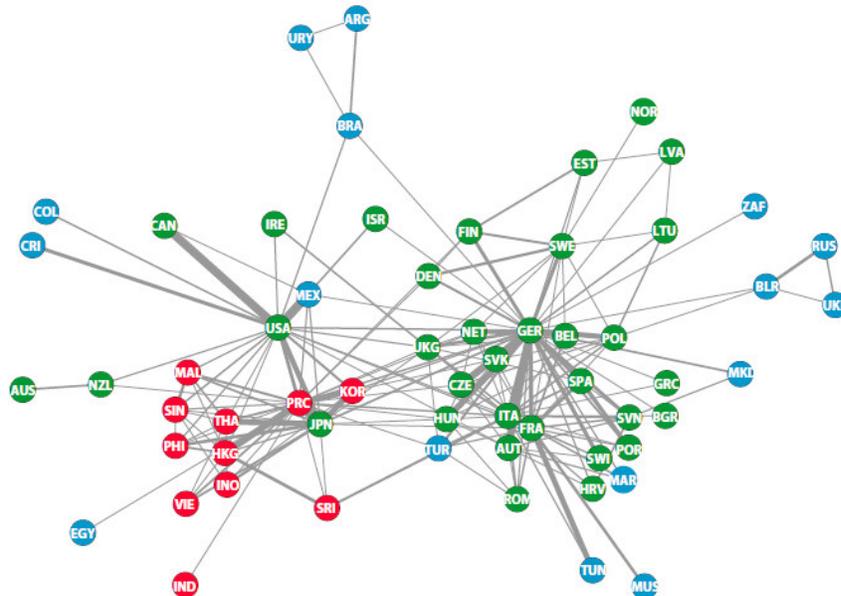
## Concepts

- **Global Value Chains** – focus on value-added, across countries (trade in tasks, capabilities)
- **Vertically-Integrated Supply Chains** – focus on ensuring supply of inputs from one step to the next (trade in goods, availability of low-cost suppliers, infrastructure)
- **Production Networks** – focus on coordination of disparate but interconnected activities (service links, logistics)
- **Outsourcing** – theory of the firm; ownership; costs and externalities
- **Offshoring** – rapid recent growth; location; employment concerns/benefits
- *Embodied services* – measurement; attribution

## Fragmentation in theory

- Jones and Kierzkowski (1990)
- Division of labor by production process
  - (i) cost saving due to differences in location advantages (e.g., differences in wage levels);
  - (ii) low service link costs, depends on trade facilitation, logistic services, soft infrastructure
- Flexibility in forming production networks
  - MNEs: freedom to cut out production blocks
  - Host countries provide niches in (narrow) locational advantages and specific service links
- Kimura and Ando (2005)
- Two dimensions: geographical distance and disintegration (intra-firm vs. arm's length; location vs. ownership)
- Clustering of fragments in geographical proximity, forming industrial agglomeration

## Connectivity with other ASEAN countries also apparent in global production networks



Source: Ferrarini (2011)

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## Decreasing trade costs central to expansion of SCs (Brooks and Hummels 2010)

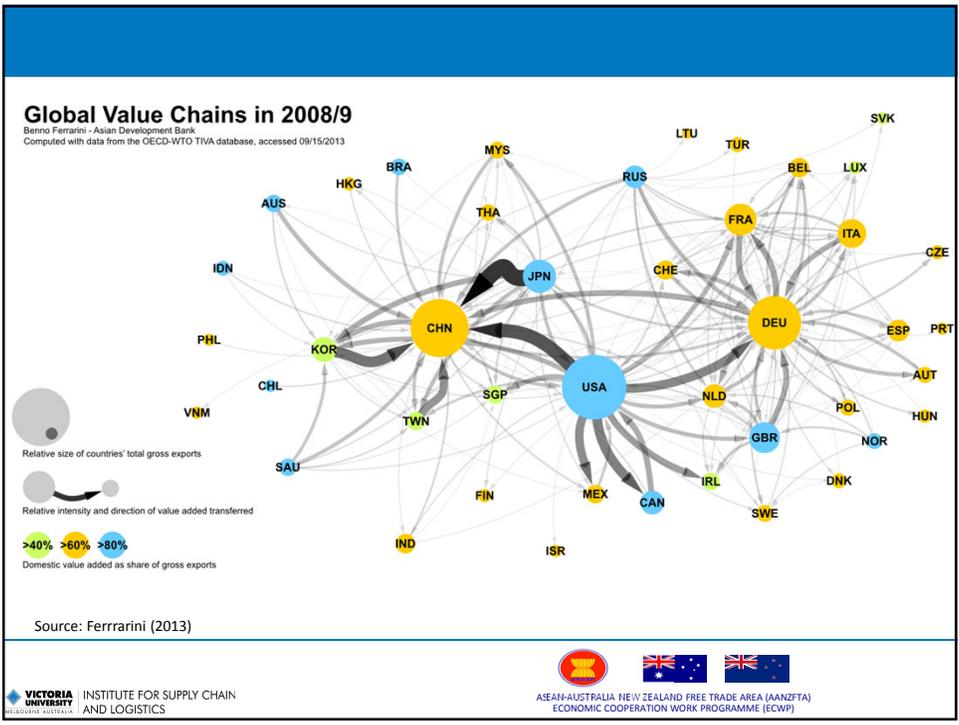
- The advent of fast transport (air shipping and faster ocean vessels) was equivalent to reducing tariffs on manufactured goods from 32% to 9% between 1950-1998
- Each additional day spent in transport reduces the probability that the US will import from source country by 1-1.5%
- Containerization in ocean transport changed the composition of freight rates, lowering the cost of distant relative to proximate travel
- Relative declines over time in air shipping prices make time-savings less expensive → aggregate trade growth, growth in time-intensive forms of integration such as vertical specialization



## Trade costs take many forms

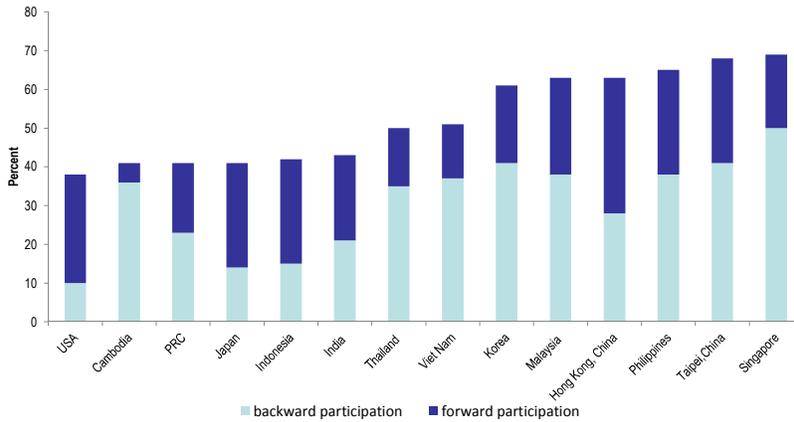
Transport Cost	Inventory Cost	Transit Time	Quality of Products	Others
<ul style="list-style-type: none"> <li>Elasticity of trade flows to transport costs ranges from -2 to -3.5 (Limao and Venables, 2001)</li> <li>10% increase in ad valorem transport costs lowers trade by 3-4% (De 2009)</li> </ul>	<ul style="list-style-type: none"> <li>Storage and warehousing costs (can be high for specific types of products)</li> <li>Possibility of just in time inventory system</li> <li>Implications on cash flow</li> </ul>	<ul style="list-style-type: none"> <li>Export delays reduce the exports of time-sensitive agro products are reduced by 7% (Djankov et al. 2006)</li> <li>\$ 1 billion collective GDP gain of GMS from export and import time reduction by 25% (Strutt et al. 2008)</li> </ul>	<ul style="list-style-type: none"> <li>Some products require special transport and storage conditions</li> </ul>	<ul style="list-style-type: none"> <li>Security - Pilferage or piracy</li> <li>Feed back mechanism between supply and demand</li> <li>Information and trade finance complement logistics</li> </ul>

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## Participation in GVCs

Foreign inputs and domestically produced inputs used in third economies' exports, as a share of gross exports, 2009 (TIVA database)

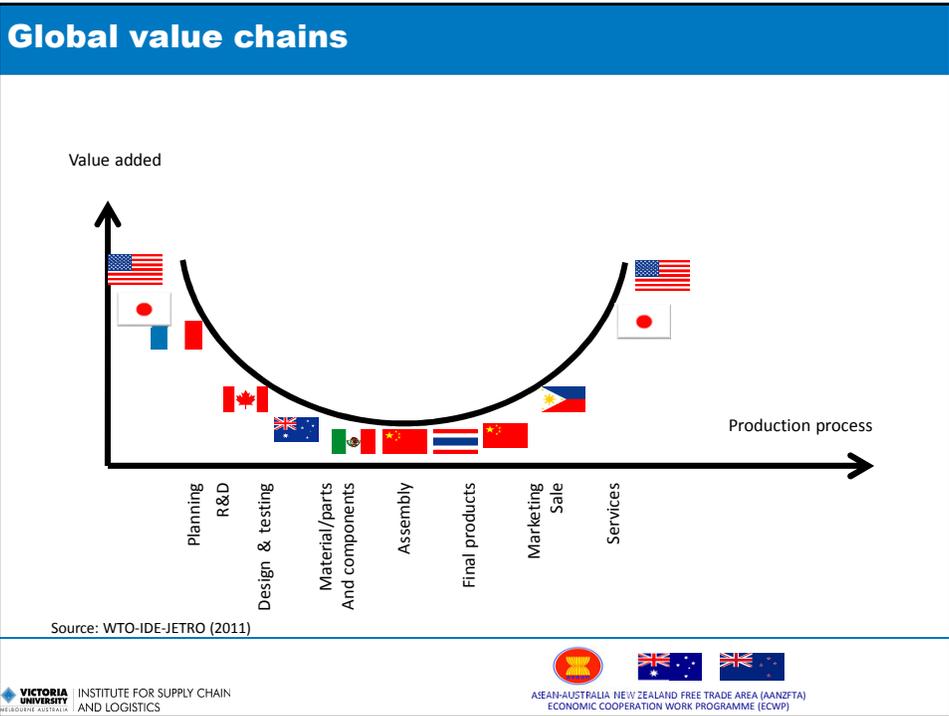
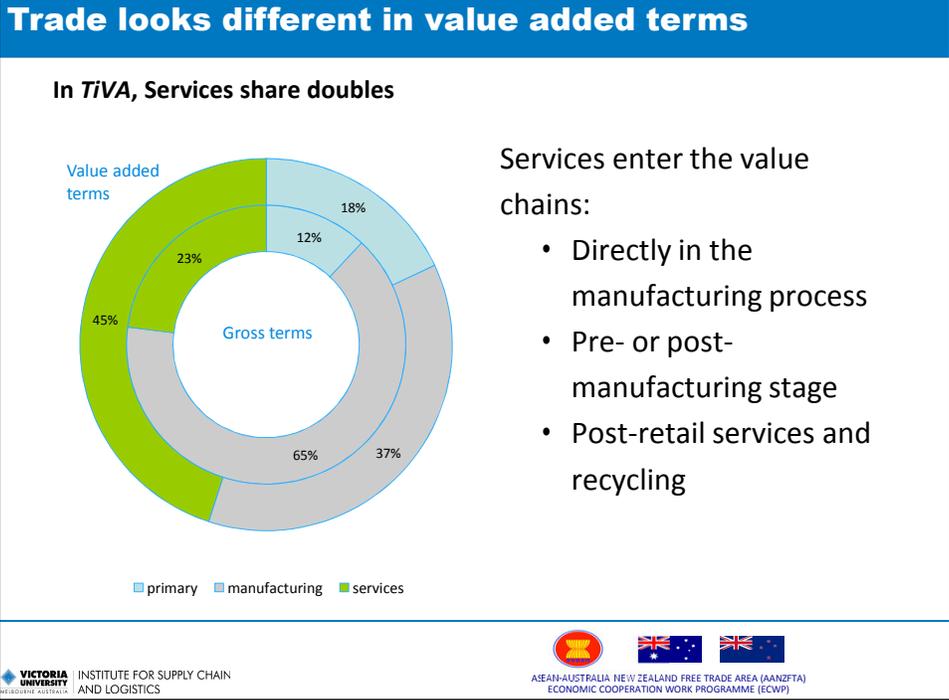


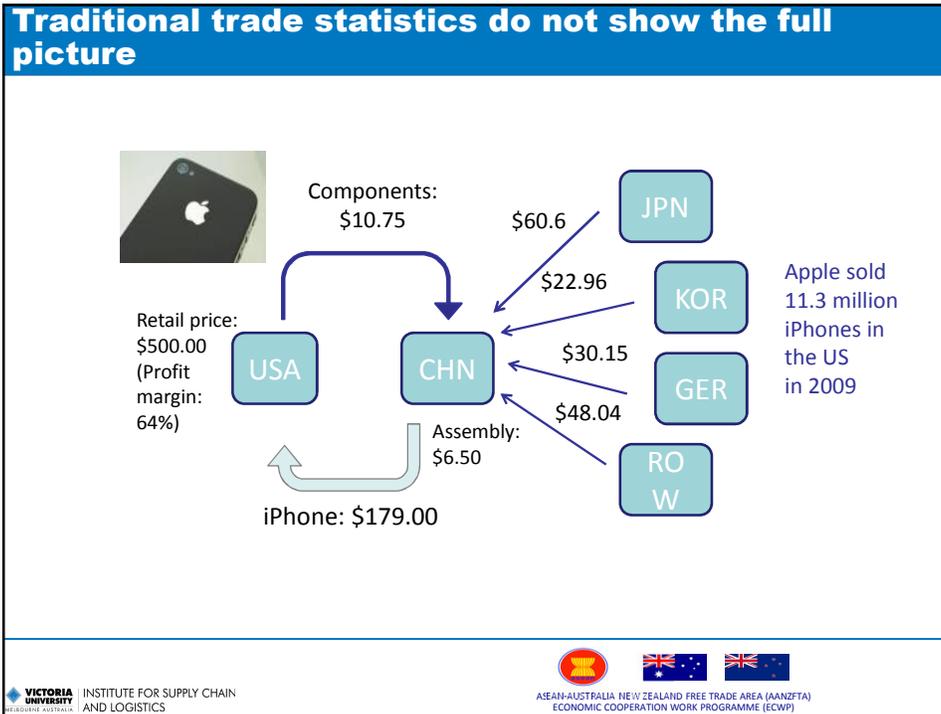
Source: OECD (2013)

## Made in the World Initiative: Measuring trade in value added...

### What have we learnt so far?

- More than 50% of world trade is in intermediate **goods (excluding oil and fuel)**
- 75% to 80% of world trade is actual value-added
- More **services** are traded and more **SME participation** when accounting for **indirect** VA imbedded in manufacture exports
- **Bilateral trade balances** are significantly reshuffled (ex. the size of the China-US deficit is halved)
- **Jobs implications** of 'trade in tasks' differ between  
**Industrialised and Industrializing Countries ...**





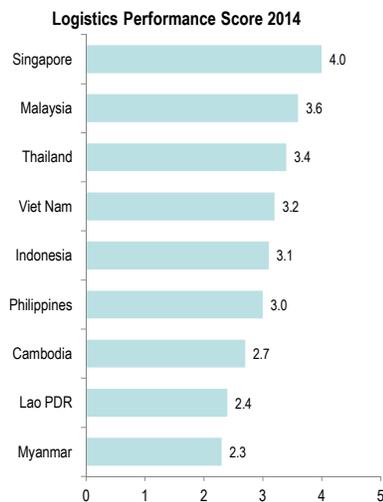
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## SEZs can circumvent shortcomings in logistics and supply chain weaknesses

Economy	Number of Zones	Key Sectors	Key Markets
United States	266	Automobiles, petroleum, electronics	US – domestic
Chile	6	Warehousing, duty free shopping	MERCOSUR, US, Canada
Mexico	109	Automotive components, electrical	US
Peru	4	Textile, automotive, agribusiness	Brazil, Chile, PRC, US, EU, Canada
Taipei,China	14	Electronics, semiconductors, electrical, high technology	Japan, US
Korea, Rep. of	10	Electronics, high technology	Japan, US
Malaysia	13	Electronics, semiconductors, electrical, automotive parts	Japan, US, ASEAN
Philippines	83	Electronics, semiconductors, electrical, automotive parts	Japan, US, ASEAN
PRC	187	Apparel, electronics, electrical	US, Japan, EU
Indonesia	27	Apparel, footwear, electronics, food processing	Japan, US, ASEAN
Viet Nam	185	Apparel, footwear, luggage, electrical, metal working	Japan; ASEAN; Taipei,China

## The LPI provides a good summary of the quality of supply chains in ASEAN economies



### Components of the LPI

Efficiency of the **customs clearance** process

Quality of trade and transport related **infrastructure** (ports, railroads, roads, information and technology)

Ease of arranging competitively priced **international shipments**

**Logistics competence** of transport operations, customs brokers

**Tracking and tracing** of consignments

**Timeliness** of shipments in reaching destinations

## Regional cooperation in trade-related infrastructure

- Externalities, economies of scale
- Coordination can leverage impacts
- GMS special forums to coordinate transport, telecoms, electric power
- Cross country economic corridors, hubs and gateways, including SEZs
- Special needs of landlocked economies
- Harmonization of soft infrastructure



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## Addressing the supply chain challenges: 4 I's for Investment

**I**nfrastructure  
**I**nstitutions  
**I**ncentives  
**I**nformation

## Trade costs can be reduced through infrastructure investments

Accumulated Reduction in Trade Costs Resulting  
 from Infrastructure Investment  
 2010-2020 (% of trade value)

Country	From Transport Infrastructure	From Communications Infrastructure
Indonesia	14.0	0.7
Malaysia	25.3	6.6
Philippines	11.4	1.7
Thailand	15.6	0.0
Viet Nam	12.2	5.9

Source: Fan (2012)

## Infrastructure

- Lower marginal costs → larger minimum efficient scale of production → economies of scale
- Reduces time costs
  - Search and border costs
  - Costs of entering into, and monitoring, supply contracts
  - Time between perception of demand and supply response
  - Impacts trade of differentiated products more than homogeneous ones
- Market and supplier access most important FDI factors, > production costs
- Service efficiency improvements equivalent to moving 1000's of kms closer to trading partners
- Eases congestion costs



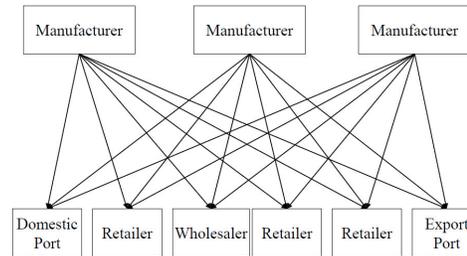
## Institutions

- Predictable legal rights and procedures
- Enforceable and equitable competition policy
- Sound regulatory framework
- Long term, local currency bond markets
- Border clearance procedures

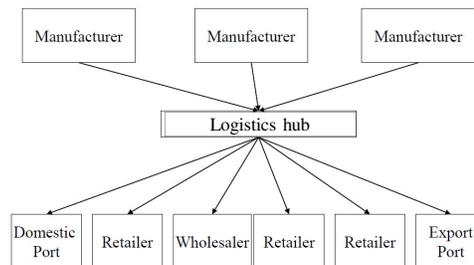


## Incentives: Example of service providers – principle of minimum transactions

No Intermediary



One Intermediary



Source: Adapted from Banomyong (2012)

## Information

- Reduction of time costs
  - *Search and border costs*
  - *Costs of entering into, and monitoring supply contracts*
  - *Time between perception of demand and supply response*
  - *Impacts differentiated products more than homogeneous ones*

## Infrastructure and logistics influence both absolute and comparative advantage

- Mitigate limits in factor endowments
- Importance of timeliness and reliability of delivery
- Intraregional integration
- Changes in composition of trade point us toward changes in the kinds of infrastructure needed
  - Light goods
  - Air transport
  - Demand for certainty, timeliness
  - Needs of small firms, new trade flows
  - Services



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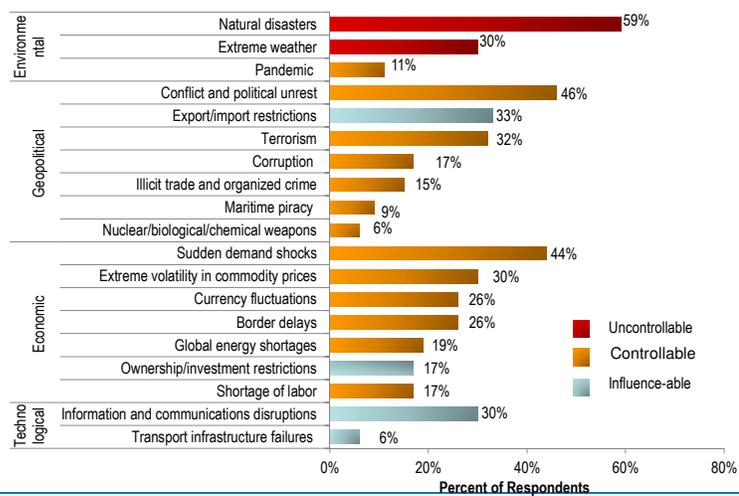


## According to Ye and Abe (2012)...

- “development of global supply chains have ... changed the risk profile of business and could potentially increase economic vulnerability in Asia and the Pacific through higher direct and indirect disaster risks”
- “supply chain strategies that increase business efficiency may actually deepen the negative impact of natural disasters”

## Supply chains are vulnerable to disruptions...

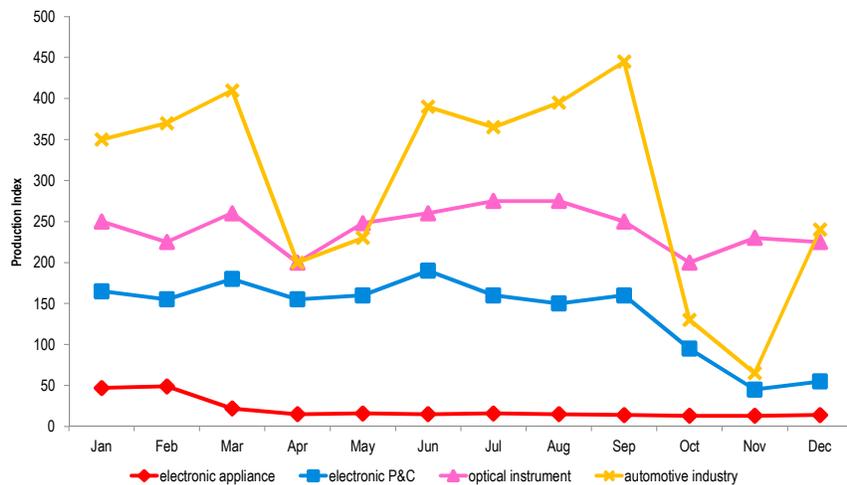
Key Triggers of Global Supply Chain Disruptions as Identified by Respondents



## In the longer term, cartelization and uncompetitive markets also pose risks

- Market power is important in international shipping
  - Minimum efficient scale in shipping is significant
  - Even on trade route with multiple carriers, they are often organized in cartels (liner conferences) determining shipping prices and market shares.
  - EU-Competitiveness Council concluded that cartelization had led to less competitive shipping markets and higher shipping prices.
- Shipping prices are increasing in product prices and tariffs, and decreasing in the elasticity of import demand, the number of carriers on the route and intensity of competition
- Market power (import demand elasticity, tariffs, number of carriers) causes higher *ad-valorem* shipping prices for developing countries and relative to market access measures (such as distance)

## Flexibility and resilience: Thailand 2011



Source: Office of Industrial Economics, Ministry of Industry, Thailand

## Rapid growth also implies risks to supply chains

- Unbalanced trade = unbalanced demand for transportation
- Rapid growth => Congestion
  - Not just in transport services; quality control
- Interdependence
  - E.g., Congestion in China is an Asia-wide problem
- But...economies of scale in trade services
  - Information
  - Competition among service providers



## Supply chain governance

### Addressing market efficiency

- Investigating the nature of transactions costs
  - Where do the bottlenecks exist?
- Overcoming or managing coordination costs
  - Political economy considerations
- Competition – cabotage laws, monopsonies
  - Providing the right environment



## Outline of discussion

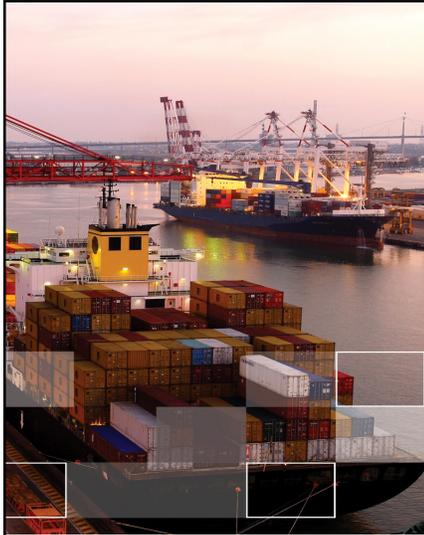
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## Key points

- Sequencing of infrastructure investments closely related to industrial structure (and its dynamics)
- Infrastructure and logistics developing fast, but the needs are still large
- Regional cooperation in trade and logistics infrastructure can boost regional integration, growth and development
- Steps to lower transactions costs differ at different points along the supply chain
- Risk management is crucial, especially for perishable goods like agricultural commodities
- Changes in technology will → ???





**Thank you**

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