Factors Affecting Integration in Global Value Chains in East Asia: Lessons for Central Asia

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1. East Asia's Economic Integration: Trade-Investment Nexus

- During the last three decades, East Asia has developed production networks and supply chains through a close trade-FDI nexus, that promoted economic development
- East Asian manufacturing industries have attracted FDI and favored trade expansion, especially in intra-regional, and intra-industry trade, in addition to final goods' trade
- East Asian countries often adopted unilateral trade and investment liberalization policies, shifting from import-substitution to export-expansion strategies.
- In the last decade, regional economic integration has also strengthened by signing several free trade and investment agreements (FTAs)

2.a Value Chains

- **Value chain concept:** separation of a final product/service into distinct phases of production. Each phase is important at it adds specific value to the product/service's final value
- **Value-adding phases**:
  - conceptualization and design
  - research and development (R&D)
  - parts and components production
  - assembly
  - delivery to final consumers, after-sales, etc.
- Value chains expand across geographical boundaries at country, regional, global level. When they involve firms located in more than one country/region, they are usually called "**global value chains**"

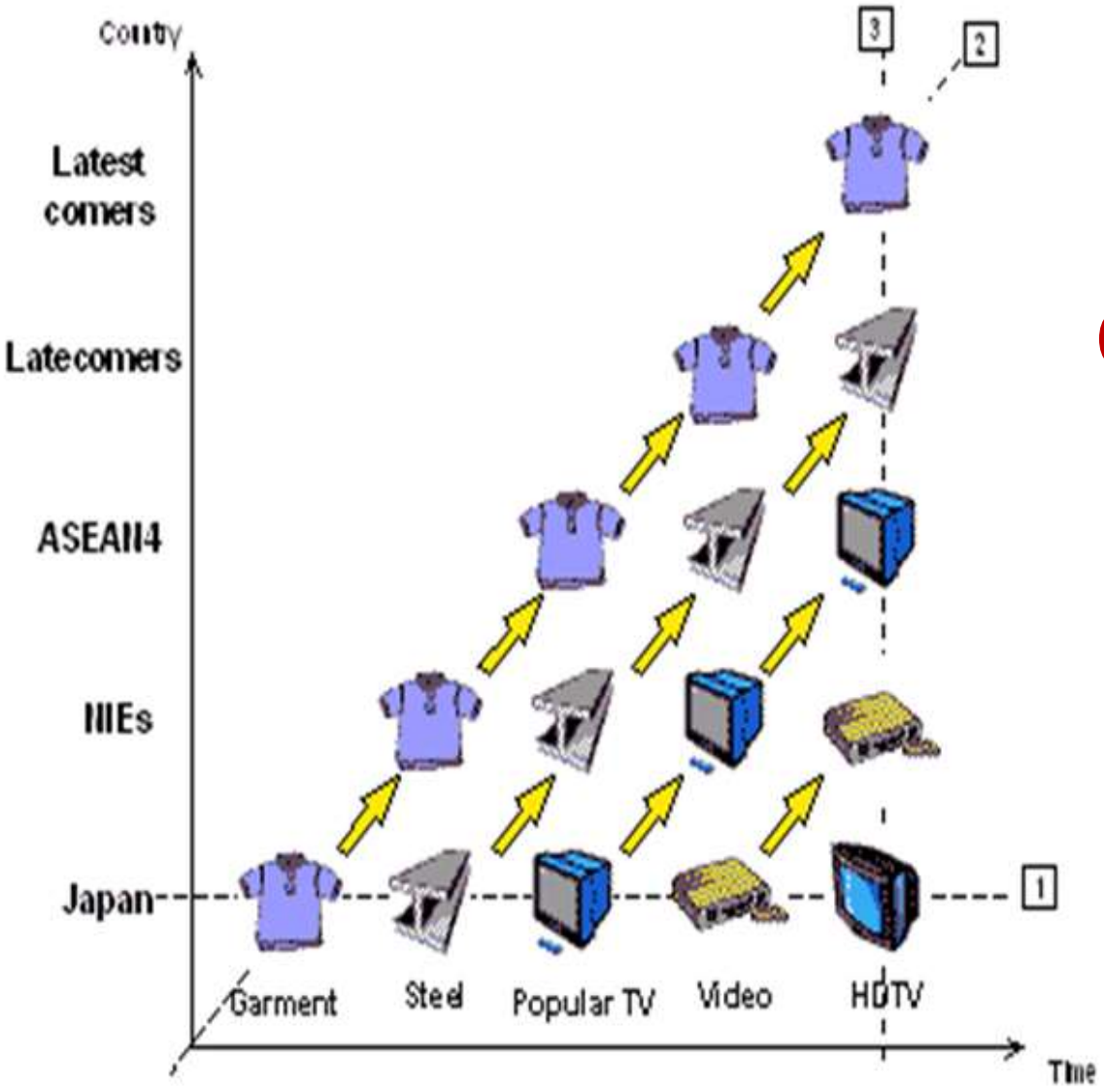
2.b Production Networks

- **Production network concept**: similar to that of value chain, but with a focus on the fragmentation of production that occurs because the final product/service is formed by several parts and components. It is related to cost reduction and quality increase that production fragmentation can lead to
- **Production fragmentation**: separation of production into multiple steps to reduce costs and increase quality—parts and components production can occur in different locations from final assembly due to:
  - **Location advantages**, i.e. low cost of raw materials, land, labor, capital, utilities; availability of good local R&D centers, infrastructure and efficient parts/components' supplying firms;
  - **Good connectivity**: availability of good transport infrastructure, efficient telecommunication services, use of modern logistics solutions to coordinate among production phases;
  - **Technical characteristics** of the products/industries, including number of involved parts and components, level of technological sophistication, flexibility, etc.

3. East Asian Production Networks in Machinery Industries

- Major East Asian production networks are in electrical machinery; electronics; and automotive industries—often established through a process of industrial relocation, i.e. setting-up of overseas subsidiaries by MNCs via FDI
- Involvement of local firms, mostly SMEs, serving as suppliers through subcontracting within MNC networks
- Regional production networks boosted productivity and cut costs, enhancing competitiveness. Emerging East Asian countries introduced policies to attract FDI while creating opportunities for technology transfer to local firms
- Important implications for human resource development, technology transfer, and local industrial development (MNCs-supplying industries) in FDI-receiving countries

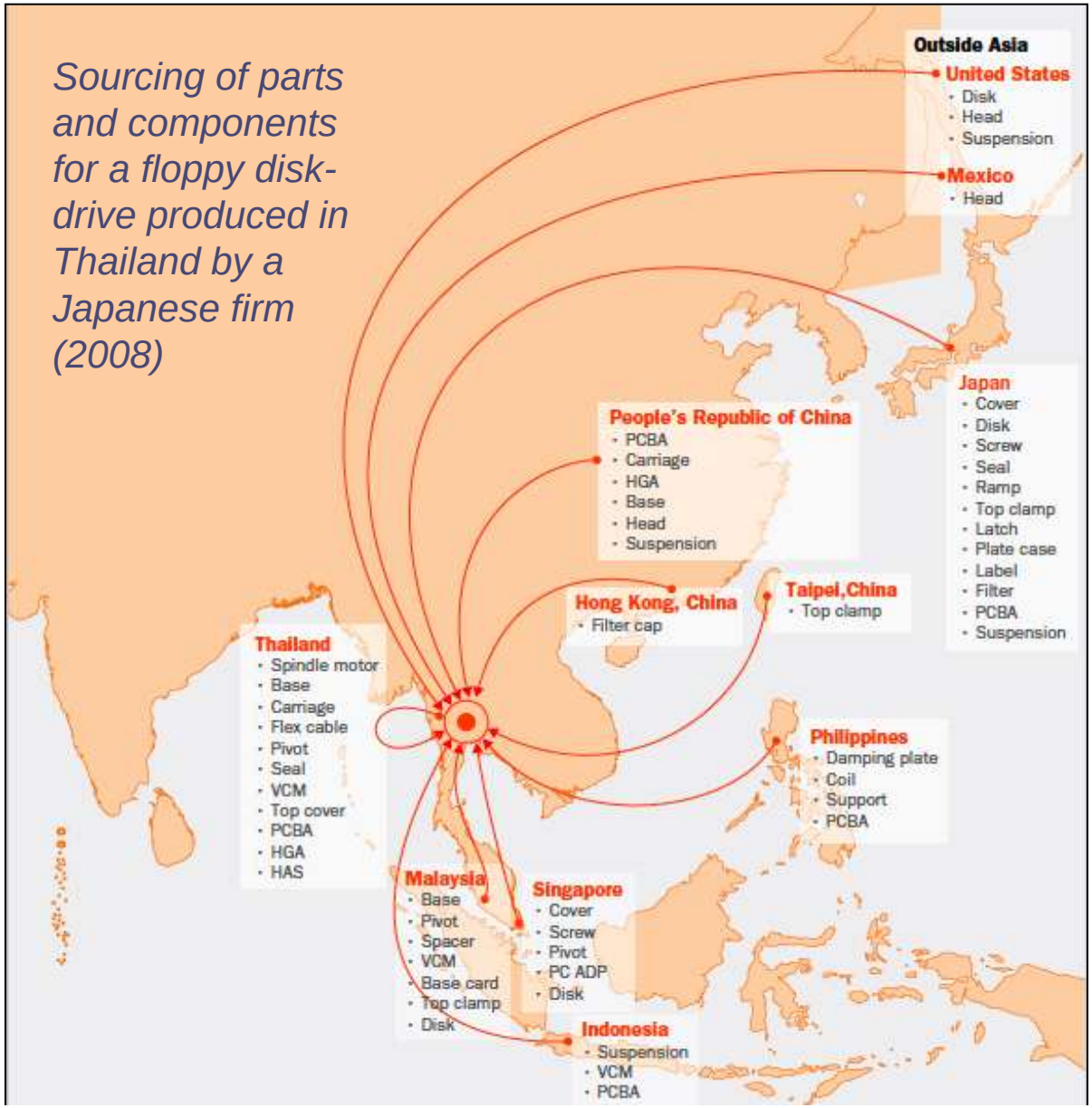
Structural Transformation in East Asia



Flying Geese Model

Production of a floppy disk drive

Sourcing of parts and components for a floppy disk-drive produced in Thailand by a Japanese firm (2008)



Source: ADB. 2008. *Emerging Asian Regionalism: A Partnership for Shared Prosperity*.

3.1. Production Networks and SMEs

- SMEs are an integral part of East Asian economies. By actively participating in regional production networks and supply chains they can contribute to inclusive and sustainable economic development—employment generation, technological upgrading, skills development
- However, not all SMEs are suitable to enter production networks as they tend to be disadvantaged when compared to larger and more efficient companies due to lack of: (i) access to finance; (ii) skills and expertise in management; (iii) entrepreneurship and networks
- But SMEs also have greater flexibility than large firms to respond to rapidly changing customers' demand and technological changeSMEs can play a crucial role in strengthening production networks through subcontracting and OEM contracts
- East Asian governments were able to promote SMEs development by ensuring the presence of competitive market structures, providing technical upgrading, supplying marketing information, introducing dedicated financing schemes and enhancing industrial clustering—which contributed to generate scale economies

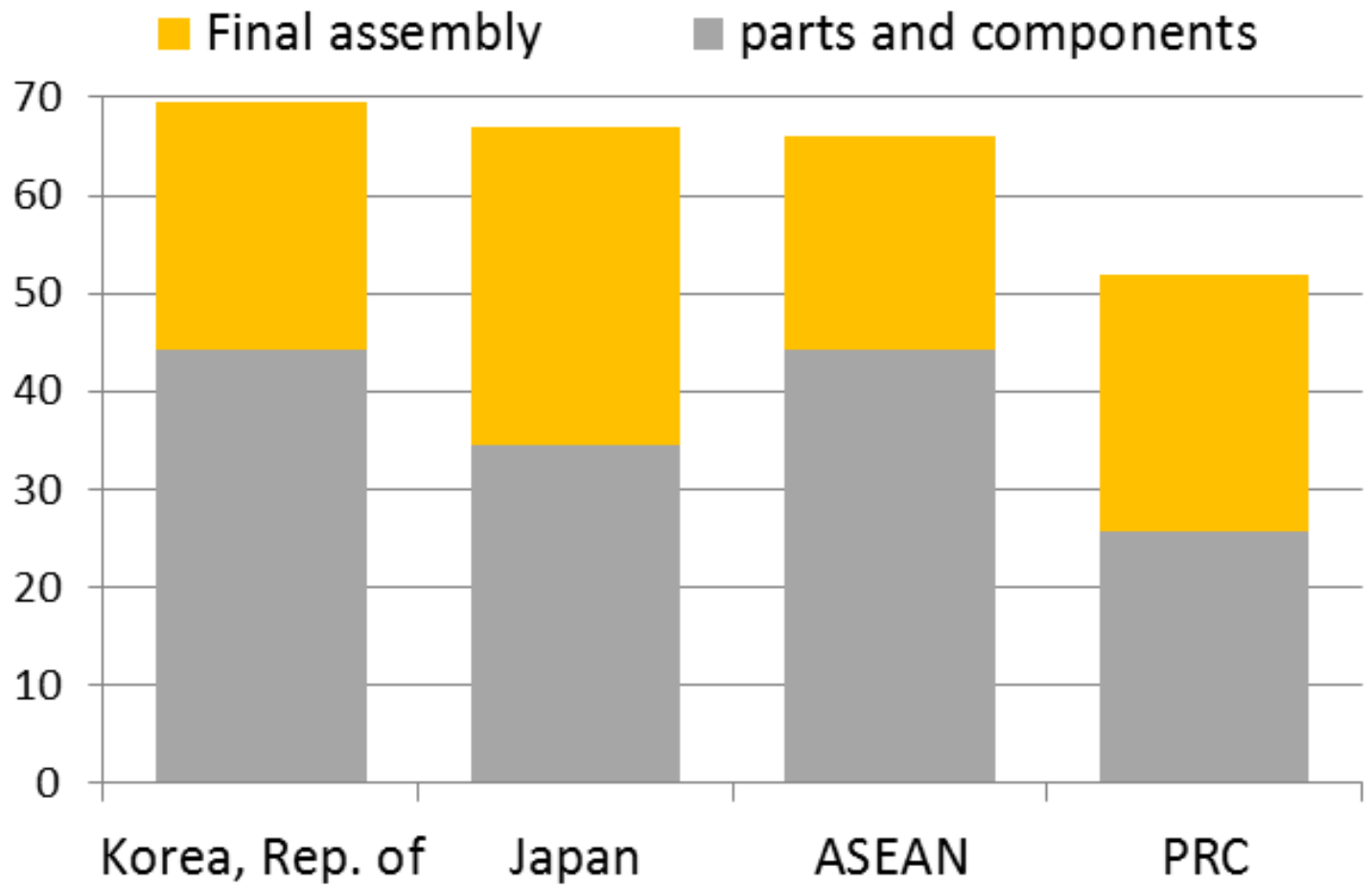
3.2. Production Networks Risks: Supply Chains Disruptions

- Impact of Thailand's floods in 2011:
  - An estimated 1000 factories were submerged in flood waters. Big MNCs buyers from Thai factories were affected by supply shut-downs—including Hewlett Packard, Dell and Apple.
  - Floods which knocked disk-drive factories offline, took a toll on the world PC market. Thailand produced ¼ of the world's disk drives. Honda reopened its flood-hit assembly plant in March 2012, or 6 months after the production line was forced to close
- Impact of Japan's earthquake and tsunami on the supply chain of motor vehicles:
  - Japanese automakers closed many assembly plants for weeks with a major impact on their suppliers, as well as Japanese motor plants in other parts of the world, including the US

4. Production Networks and East Asia's Trade Patterns

- East Asian production networks have changed international trade patterns. Traditional theories suggest that countries trade horizontally in final goods (produced entirely within a country).
- But the growth in East Asian trade is largely explained by expanding intra-industry trade in parts and components
- Broad economic categories can be used to classify capital goods, consumer goods, intermediate goods, with parts and components trade estimated by using SITC 5-digits or HS 6-digit categories
- Athukorala compiled a list of parts and components in manufacturing trade from the UN Broad Economic Classification, focusing on specific product categories in which network trade is heavily concentrated. Assembly trade can be then estimated as the difference between parts/components and recorded trade in these product categories
- RIETI (Japan) has created a website to calculate the trade composition by production stages (primary, intermediate, final goods) of manufactures

Share of Production Networks in Manufacturing Exports (2008)



Export composition by production stages—ASEAN countries, 2012

Exporting economies	Primary goods	Intermediate goods		Final goods	
		Processed goods	Parts and Components	Capital goods	Consumption goods
Brunei Dar.	50.2	48.6	0.3	0.2	0.8
Cambodia	5.7	5.7	0.4	0.3	87.9
Indonesia	34.0	37.9	6.2	4.8	17.1
Malaysia	8.2	38.7	31.7	12.8	8.8
Philippines	7.4	13.1	46.0	21.4	12.2
Singapore	1.2	50.6	27.1	14.5	6.5
Thailand	7.0	26.4	19.1	22.1	25.4
Viet Nam	15.3	12.4	11.4	20.5	40.4
ASEAN8	12.4	34.2	21.9	14.6	17.0

Source: Research Institute of Economy, Trade and Industry website, www.rieti-tid.com/

Export composition by production stages—non-ASEAN countries, 2012

Exporting economies	Primary goods	Intermediate goods		Final goods	
		Processed goods	Parts and Components	Capital goods	Consumption goods
PRC	0.9	21.4	18.2	30.7	28.8
Japan	1.5	28.5	29.9	23.9	16.2
Korea, Rep. of	0.7	36.9	31.1	20.1	11.2
India	7.4	52.8	7.0	6.2	26.6
Hong Kong, China	10.8	34.5	17.1	13.6	24.0
Taipei,China	0.4	35.1	36.0	19.1	9.4
Australia	63.2	23.4	2.2	2.7	8.5
New Zealand	16.2	26.8	2.7	4.7	49.5
USA	9.2	33.6	20.8	19.3	17.1
EU27	5.8	34.8	16.3	15.5	27.6

Source: Research Institute of Economy, Trade and Industry website, www.rieti-tid.com/

Import composition by production stages—ASEAN countries, 2012

Importing countries	Primary goods	Intermediate goods		Final goods	
		Processed goods	Parts and Components	Capital goods	Consumption goods
Brunei Darussalam	1.6	41.9	10.7	12.4	33.4
Cambodia	2.2	64.1	3.4	14.7	15.6
Indonesia	11.1	49.6	13.8	18.1	7.4
Malaysia	11.0	35.0	28.1	16.3	9.7
Philippines	16.5	33.2	28.7	9.5	12.2
Singapore	13.6	36.1	29.4	12.0	8.9
Thailand	19.4	34.9	19.7	18.0	7.9
Viet Nam	6.8	52.4	16.5	15.5	8.8
ASEAN8	13.4	39.4	23.2	15.1	8.9

Source: Research Institute of Economy, Trade and Industry website, www.rieti-tid.com/

Import composition by production stages—non-ASEAN countries, 2012

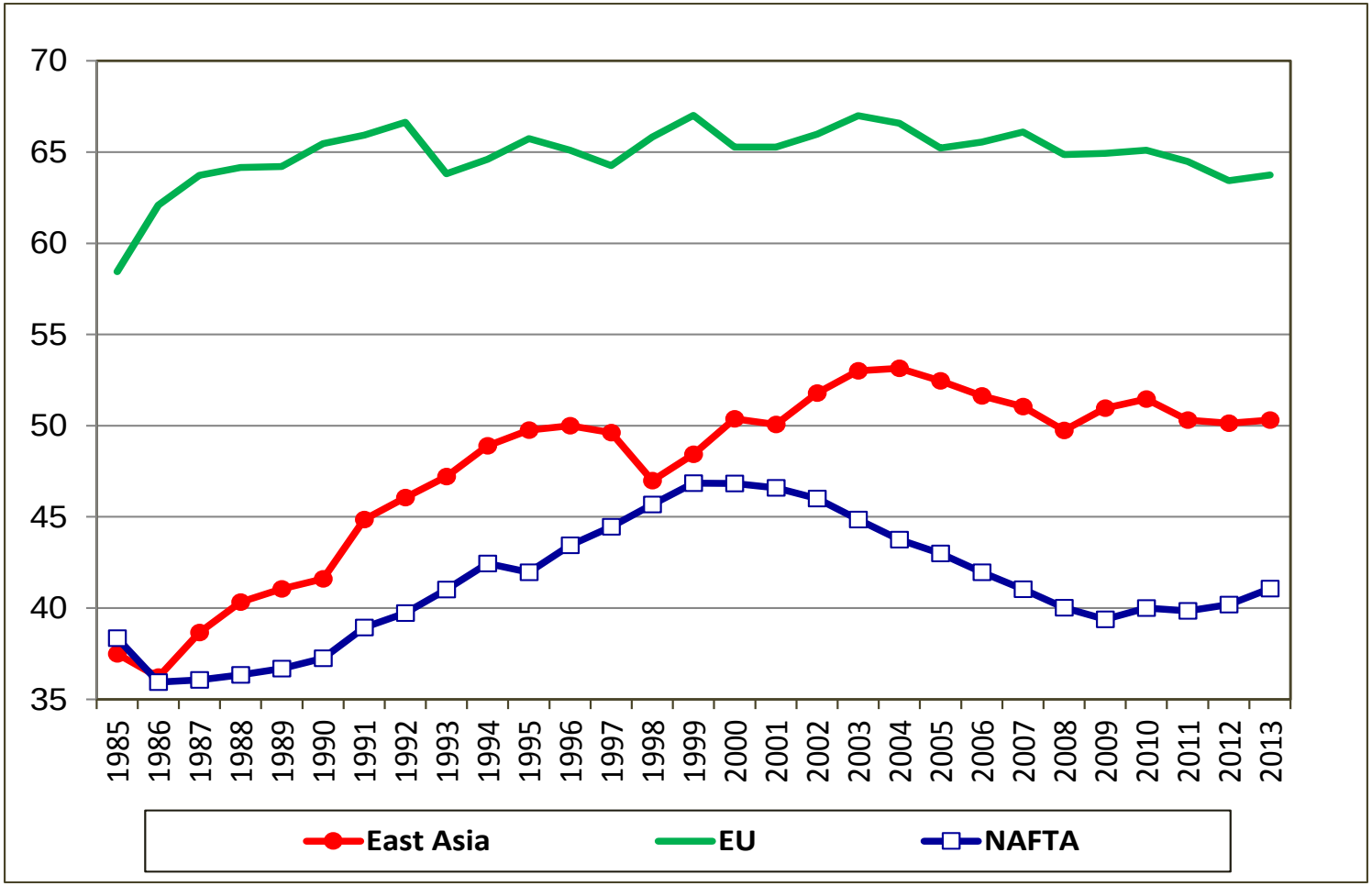
Importing economies	Primary goods	Intermediate goods		Final goods	
		Processed goods	Parts and Components	Capital goods	Consumption goods
PRC	33.5	26.4	19.0	14.1	7.0
Japan	29.0	29.8	9.5	10.5	21.2
Rep. of Korea	32.2	34.3	14.1	11.3	8.1
India	42.9	36.4	7.2	9.0	4.5
Hong Kong, China	2.1	28.1	32.2	19.4	18.2
Taipei,China	21.3	36.4	20.8	13.0	8.5
Australia	11.1	26.5	10.3	23.2	29.0
New Zealand	14.5	27.4	8.8	18.2	31.2
USA	16.8	23.6	14.7	17.6	27.4
EU27	16.5	32.0	13.8	12.9	24.9

Source: Research Institute of Economy, Trade and Industry website, www.rieti-tid.com/

4.1 Changing East Asia's Trade Patterns

- The share of intraregional trade in East Asia has increased from about 34% in 1980 to about 51% in 2013. This trend is largely reflected by rapidly expanding intraregional trade in parts and components
- As a consequence, East Asia has experienced a structural change in the international division of labor among countries at different income levels and development stages (*flying geese model*)
- Traditionally, East Asia has been relying more on the rest of world as a market for final goods than as a market for parts and components. Final goods have been typically produced for the US and Europe
- The dependence of East Asia on extra-regional markets is far greater than indicated by standard trade data due to the importance of intermediate goods' trade—but changing after the global financial crisis of 2008/09
- Note that this has implications for defining rules of origin in FTAs because of intra-regional trade is characterized by low value-added

Intraregional Trade Shares (%)



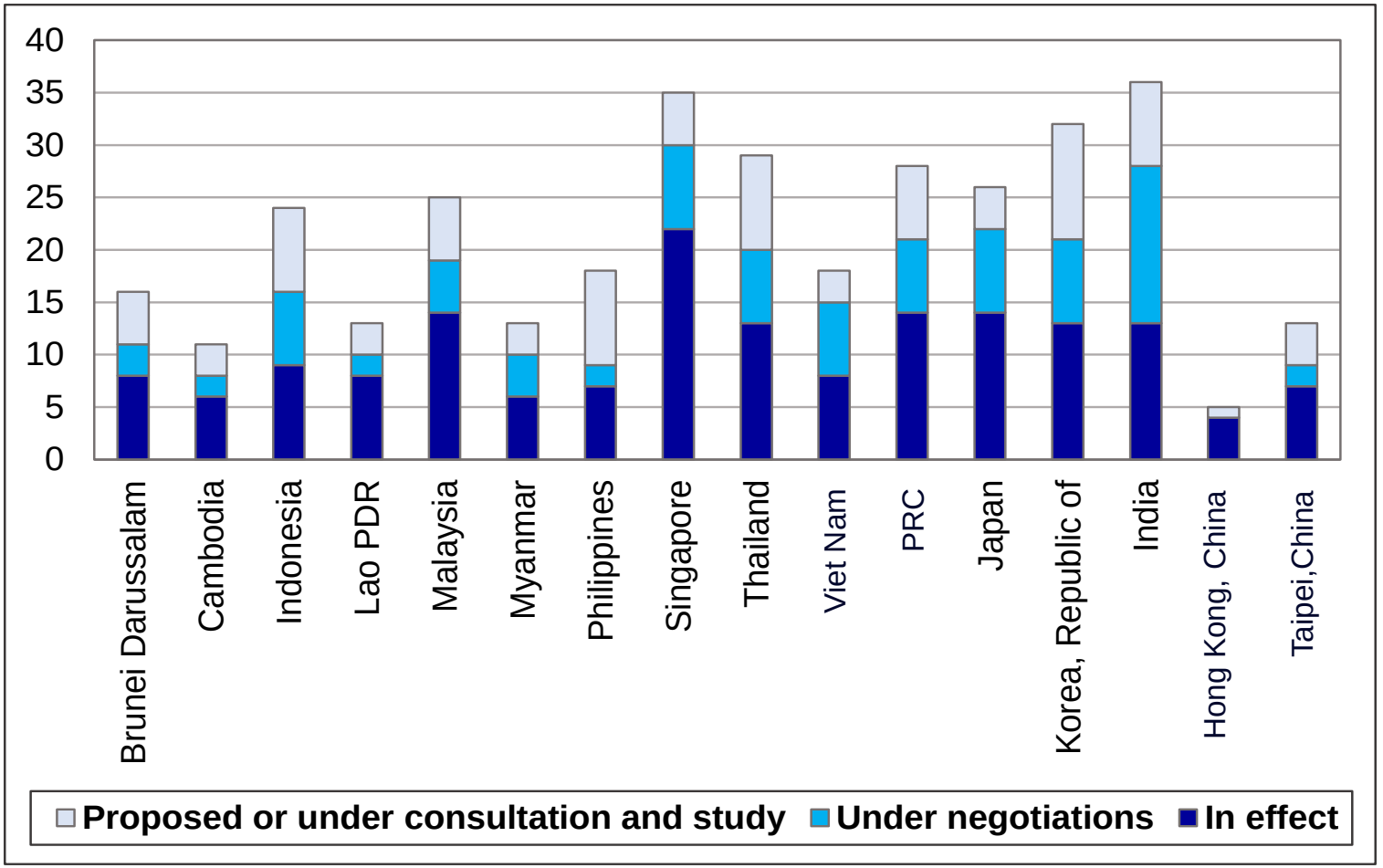
Source: International Monetary Fund, *Direction of Trade Statistics*; and CEIC for Taipei,China.

4.2. Intraregional Trade Growth in East Asia: Key Factors

- Great inter-country diversity in labor supply conditions, wages, and skills availability has provided the basis for production relocation from to high- to lower-wage countries
- Adoption of liberal trade and investment regime (outward-oriented, industrialization policies plus domestic structural reforms)
- The emergence of the PRC as low-cost assembly location boosted components production and assembly activities in the region overall
- Presence of good transport infrastructure such as efficient ports and communication systems
- Presence of agglomeration advantages (network externalities) for firms located in the region—MNCs have upgraded the local R&D content, assigning global production responsibilities to local affiliates
- Open regionalism followed by East Asian economies
- Rapid economic growth and structural transformation in several East Asian countries expanded market size and outsourcing activities

Rapid spread of FTAs in ASEAN

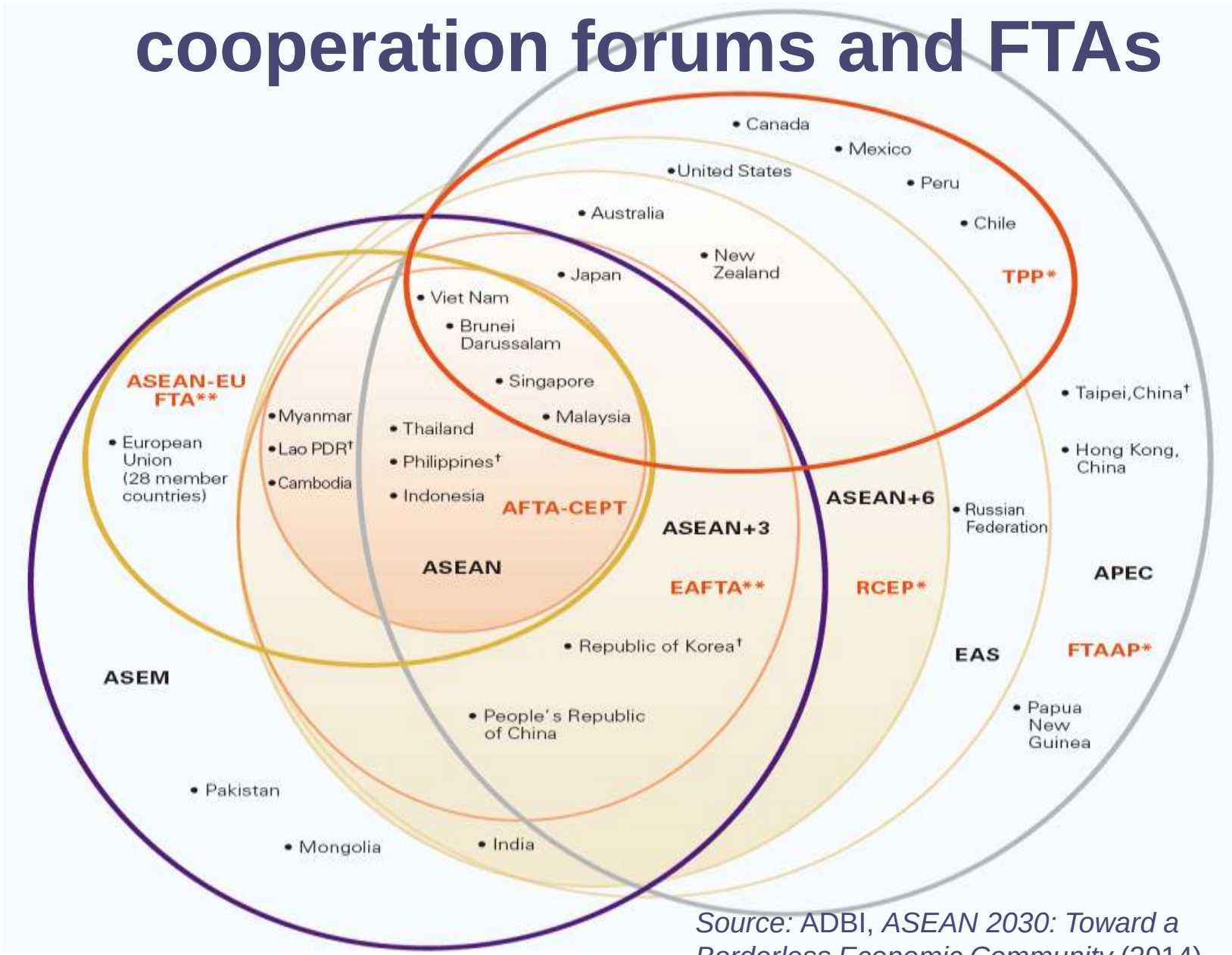
Number of FTAs in ASEAN and other East Asian economies



Note: FTAs in effect include those that have been signed but not in effect. FTAs under negotiations include framework agreements signed.

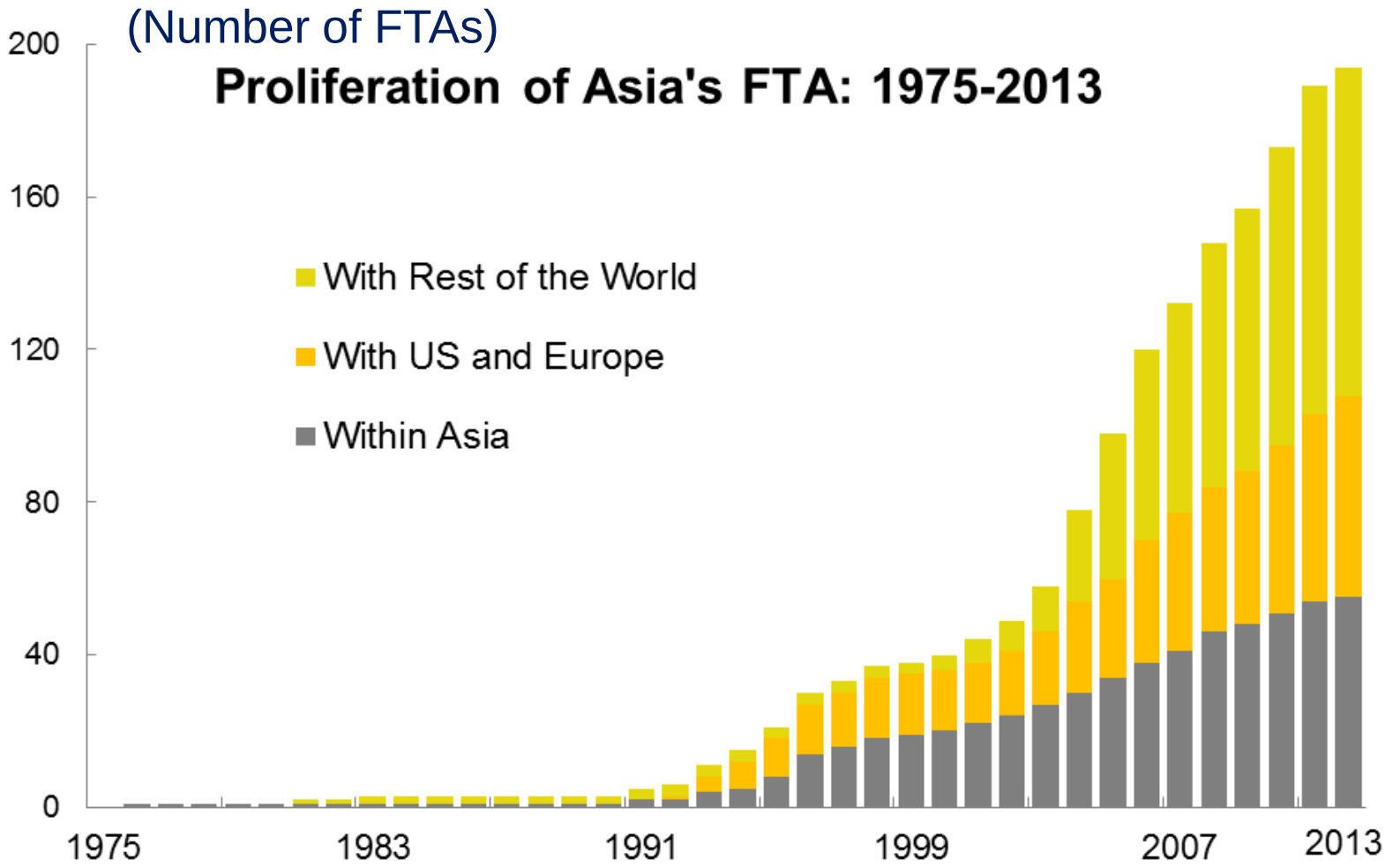
Source: ADB, *Asia Regional Integration Center* (ARIC) FTA Database (www.aric.adb.org)

East Asia's main regional economic cooperation forums and FTAs



Source: ADBI, *ASEAN 2030: Toward a Borderless Economic Community* (2014)

East Asia's Focus on Open Regionalism



Note: Includes one FTAs which have been signed or which are under negotiation. Proposed FTAs are not included. Numbers are cumulative as of December 2013.
Source: Asian Development Bank. *Asia Regional Integration Center.*

5. Economic Integration in Central Asia: Can Supply Chains be Created?

- Low degree of intraregional economic interdependence in Central Asia as measured by integration indicators such as intraregional trade and investment shares, as well as intraregional holdings of financial assets—but relatively high labor force integration inherited from the Soviet Union times
- Very limited economic diversification and lack of complementarity among production structures in the region—high concentration of exports in natural resources
- Geographical challenges due to vast, unpopulated areas—still need to further develop physical infrastructure, policies, and regional institutions connecting countries across the region
- Industries such as electrical machinery, electronics, automotive, etc. around which East Asian production networks proliferated are unlikely to be efficiently developed in Central Asia due a lack of basic infrastructure, supporting industries, conducive labor market conditions

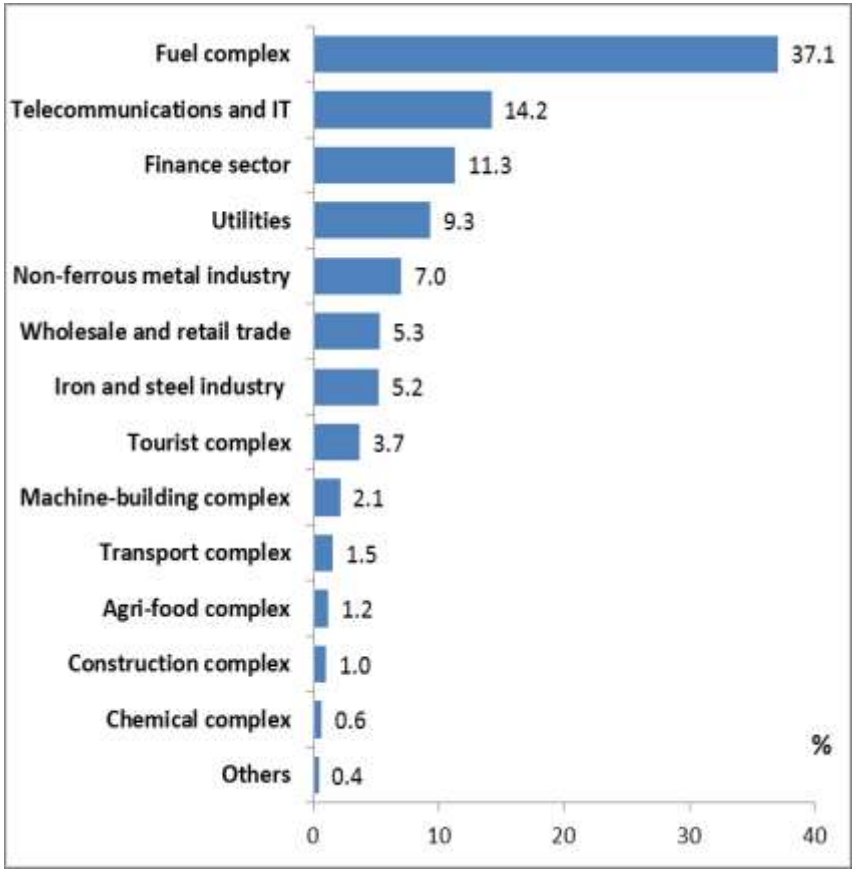
Five major trade items in selected Central Asian countries

	TURKMENISTAN		AZERBAIJAN		TAJIKISTAN		KAZAKHSTAN		KYRGYZ REPUBLIC		UZBEKISTAN	
	Item	% to Total EXP/IMP	Item	% to Total EXP/IMP	Item	% to Total EXP/IMP	Item	% to Total EXP/IMP	Item	% to Total EXP/IMP	Item	% to Total EXP/IMP
EXPORTS	Petroleum Gas	81.0	Crude Petroleum	88.0	Raw Aluminum	59.0	Crude Petroleum	55.0	Gold	34.0	Raw Cotton	15.0
	Refined Petroleum	10.0	Refined Petroleum	4.3	Raw Cotton	12.0	Petroleum Gas	4.9	Refined Petroleum	6.9	Cars	15.0
	Non-retail Pure Cotton Yarn	2.3	Petroleum gas	1.1	Lead Ore	3.8	Refined Copper	4.3	Delivery Trucks	4.6	Refined Copper	9.3
	Propylene Plolymers	1.4	Raw Sugar	0.8	Other Ores	3.7	Ferroalloys	4.3	Non-Knit Women's Suits	3.4	Non-retail Pure Cotton Yarn	6.6
	Crude Petroleum	1.3	Other Fruits	0.5	Dried Fruits	3.6	Refined Petroleum	4.2	Precious Metal Ore	3.3	Radioactive Chemicals	6.2
	Others	**4.0**	**Others**	**5.4**	**Others**	**17.9**	**Others**	**27.3**	**Others**	**47.8**	**Others**	**47.9**
IMPORTS	Other Large Iron Pipes	6.9	Cars	6.8	Refined Petroleum	7.3	Crude Petroleum	5.2	Refined Petroleum	16.0	Vehicle Parts	8.1
	Valves	4.2	Planes, Helicopters	3.0	Other Footwear	5.0	Railway Freight Cars	3.5	Cars	4.2	Packages Medicaments	4.4
	Iron Structures	4.1	Jewellery	2.8	Wheat	4.1	Refined Petroleum	3.3	Pile Fabric	3.7	Sawn Wood	3.1
	Iron Pipes	3.4	Wheat	2.3	Petroleum Gas	3.8	Cars	3.2	Delivery Trucks	3.2	Crude Petroleum	3.0
	Raw Iron Bars	3.0	Rolled Tobacco	2.3	Knit Women's Suits	3.2	Packaged Medicaments	2.3	Packaged Medicaments	3.0	Refined Petroleum	3.0
	Others	**78.4**	**Others**	**82.8**	**Others**	**76.6**	**Others**	**82.5**	**Others**	**69.9**	**Others**	**78.4**

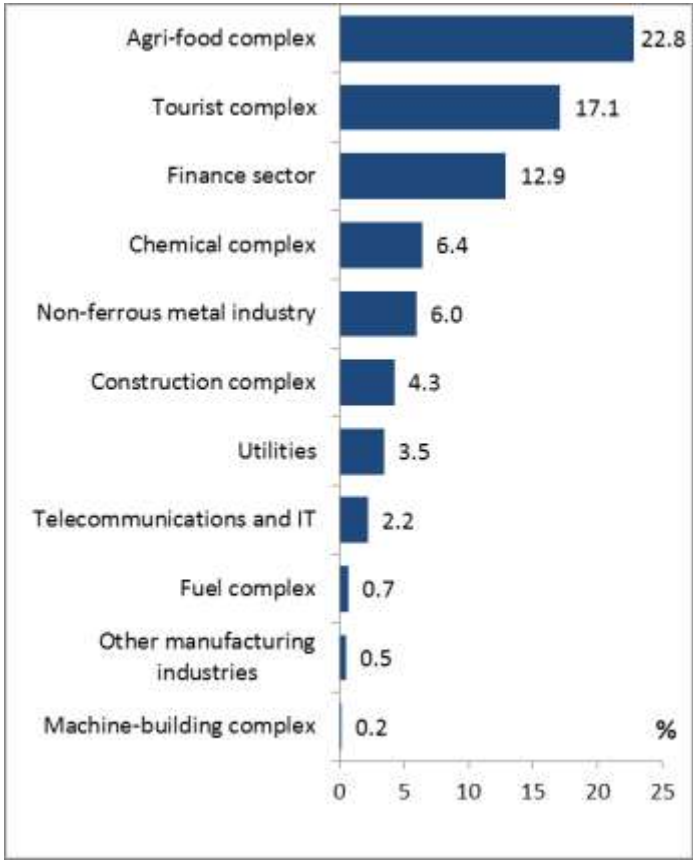
Source: Observatory of Economic Complexity

FDI stock to Central Asia from Russia and Kazakhstan (2013)

Russian FDI Stock in Central Asian Countries, by sector, 2013

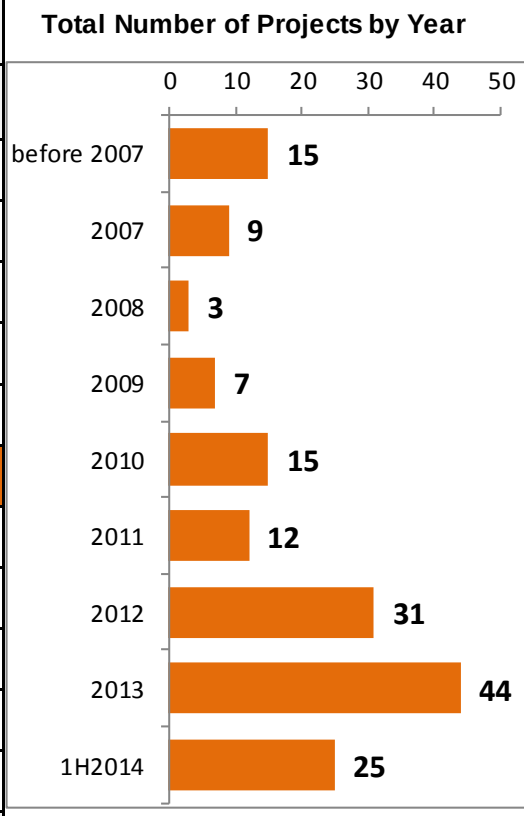


Kazakhstan FDI Stock in Central Asian Countries, by sector, 2013



Intraregional FDI Stock of selected Central Asian Countries

2013, US$ billion	Investing Country					
Recipient Country	Azerbaijan	Belarus	Georgia	Kazakstan	Russia	Ukraine
Azerbaijan		0.01			1.37	
Belarus			0.01	0.02	7.90	0.01
Georgia	1.09			0.53	0.46	0.18
Kazakhstan		0.05			9.27	
Russia	0.04	0.39	0.03	2.96		0.89
Ukraine	0.12	0.05	0.03	0.19	14.70	
Armenia				0.01	2.20	
Kyrgyzstan				0.50	0.64	
Tajikistan				0.07	1.03	
Turkmenistan					0.02	
Uzbekistan				0.08	3.64	
Total	1.25	0.49	0.07	4.36	39.86	1.08



Source: Eurasian Development Bank

5.1. FDI Motives in Central Asia

- **Investing countries' interest**
  - Natural resource supply (>50 % of total FDI)
  - Local market penetration
  - Not searching for cheap labor (almost no FDI in labor-intensive sectors)

- **Hosting countries' interest**
  - Industrial diversification
  - Need of capitals for productive investment due to low domestic savings (Kyrgyzstan, Tajikistan, Uzbekistan)
  - Technology transfer and marketing linkages

ADBI Study: Connecting Central Asia with Economic Centers—Tokyo, 2014

5.2. Lessons from East Asia for Central Asia

- A coherent and predictable market-oriented economic policy is essential to support economic diversification. At the same time, following a strategy of open regionalism is important to establish a trade-investment nexus
- The East Asian experience shows that an appropriate policy mix combining domestic structural reforms with initiatives for regional integration helps benefit from economic proximity and develop competitive regional production networks
- If Central Asian economies want to join global supply chains they should reduce trade costs, strengthen their productive capacity and enhance the quality of institutions

5.3. Central Asia's Supply Chains: New Frontiers

- **Central Asian economies have the potential to enter regional production networks and global supply chains in several industries:**
  - Energy and natural resource-based
  - Agro-processing, food
  - Construction
  - Petrochemicals
  - Chemicals and Fertilizers
- **Close collaboration with the People's Republic of China in developing regional production networks and entering global supply chains is very important**
- **The CAREC Institute can help formulate a regional strategy to promote industrial development through production networks and economic diversification**

Thank you!

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