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Connectivity in East Asia

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CONNECTIVITY IN EAST ASIA

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Asia's re-emergence as an economic powerhouse owes much to the expansion of its international trade and investment, and particularly to its intraregional flows of traded goods (raw materials, intermediate goods, and final goods) and services, capital, information, and, to a lesser extent, labour. This increased regional connectivity and integration has been fostered by the connections of supporting infrastructure, both hard (physical) and soft (institutional), greater credit availability, and efficient logistics services.

In the Ricardian model of international trade with at least some immobile factors of production, comparative advantage determines the gains from trade through specialization in production and the movement of final goods. In today's globalized economy, governments struggle to monitor and control flows of financial capital, to develop mutual recognition agreements for the movement of skilled labour (and despair of controlling the illegal migration of unskilled labour), and encourage investment in other countries' natural resources. Flows of traded final goods frequently derive from flows of intermediate goods, and are now as likely to engender trade in services as vice-versa. Flows of information and other intangibles incite and enhance flows of goods, services, and factors of production, as well as logistics to facilitate the flows. Internationally, these developments have been most obvious, and probably most beneficial, in East Asia.

Changes in technology and policy have influenced intrafirm transaction costs and therefore production processes, allowing fragmentation, outsourcing, and offshoring. Where previous production and delivery systems have become "unbundled" due to technological developments, as in the energy sector, they have led to rethinking the roles of public and private sectors. Where they have found more efficient modes of transportation and distribution (such as the advent of standardized shipping containers, or applying digital technology to reform customs procedures) they have lowered trade costs and sparked a proliferation of outsourcing for parts, components, and services.[1]

As recently as the 1960s, the prevailing paradigm of economic policy in developing countries supported import substitution and infant industry protection. The newly industrialized economies (NIEs) of Hong Kong, Korea, Singapore, and Taiwan had reasons[2] to challenge that orthodoxy, rapidly increased their trade and for the most part welcomed foreign direct investment. Technological

[1] Trade costs play a central role in determining trade flows. Jacks, Meissner and Novy (2008) found that declines in trade costs explain more than half of the surge in trade during the first wave of globalization (pre-World War I, 1870-1913) and roughly one-third of post-World War II trade growth, while a steep rise in trade costs explains the entire trade collapse in the inter-war period.

[2] Hong Kong and Singapore were essentially city-states with limited economic hinterlands, while (South) Korea and Taiwan faced potential threats from neighbouring economies from whom they had become politically estranged, providing strong motivations to develop alternative external economic relations.

developments, such as the introduction of container transport, and financial deepening and exchange rate realignments following the end of the Bretton Woods currency system and the mid-1980s Plaza Accord facilitated the process. As their growth accelerated, their example helped persuade other economies, particularly in East Asia, to adopt similar paths. While this process came to be known as "export-led development," imports of capital goods (in large part to support production of exports) played an even more critical role --- most countries in the region ran persistent trade deficits from the mid-1970s until the 1997-98 Asian Financial Crisis.

The tradability of many manufactured goods produced during East Asia's industrialization meant that economies could expand rapidly without turning terms of trade against themselves, while specializing in a relatively narrow range of goods allowed a more manageable policy reform process. As global value chains took hold through the region they facilitated entry to manufacturing but diminished returns from it, contributing to further structural transformation toward modern service-based economies.

Information and knowledge, and their increased prevalence as the region has become more connected, have played a key role in recent developments. Knowledge is non-rivalrous, building potential links between international integration and growth. Grossman and Helpman (2015) note that integration of peoples and cultures facilitates the flow of knowledge across national borders and foreign ideas can prove useful for inventing or improving products or production processes. Furthermore, integration of product markets via international trade affords those who invent or improve products a greater potential market in which to earn returns even as it subjects them to additional competition from foreign rivals. Finally, international interactions affect the incentives for creation of new knowledge as well also those for technological diffusion, with consequences for productivity growth. Knowledge spillovers tend to accelerate growth, as a lower cost of further innovation arises with advances made elsewhere.

The next section looks at how trends in Asian trade have developed as the region's connectivity has increased. The third section examines how logistics and infrastructure services influence those trends. Section four explores the interaction between connectivity and structural transformation. The fifth section looks at the roles of foreign direct investment and global value chain formation, while the final section draws some conclusions and applies their lessons to the region's outlook.

2. Trends in Asian trade

Asia's trade has soared over the past several decades, with China and Vietnam in particular recording explosive growth (Table A). China's exports grew at an average of 19% a year between

1990 and 2000 and over 14% a year between 2000 and 2013, while Vietnam's export growth rate exceeded 20% and 13% on average over the same periods. Japan's exports grew at an average of 4% annually between 1990 and 2013, reflecting its economy's slower growth and more mature export portfolio. Other major economies of Asia notched up export growth of around 10% a year over 1990-2000 and slower growth in 2000-2013. In just 23 years, India's trade expanded 16 times. China's increased over 30 times as it became the largest trader in Asia, far surpassing Japan. It is noticeable from the table below that the average growth rates during 2000-2013 decelerated in contrast to 1990-2000 period exhibiting consolidation in the Asian market and lingering effects of the global financial crisis in major markets.

[Table A]

Developing Asia now accounts for a much larger share of world exports, up from 14.5% in 1990 to 29.5% in 2013 (Figure 1). Japan's share fell from 6% to around 4% during 1980 and 2013, while China's share of world exports rose from 1.0% to 11%. Korea, Hong Kong, Singapore and India experienced increasing shares of world exports over the same period with a slight upturn observed in most other Asian economies.

[Figure 1]

Trade within Asia in total world merchandise exports grew faster (from 16.1% in 1995 to 25.3% in 2014) than the region's external trade (from 14.3% to 15.6% between 1995 and 2014). Intraregional merchandise exports (as a percent of world merchandise exports) in developing Asia more than doubled from 9% to 19.7% between 1995 and 2014, while extraregional trade rose by just 4.2%.

[Table B]

Intraregional trade accounts for a growing share of most regions' trade—half of world trade takes place between partners less than 3,000 km apart (Berthelon and Freund 2004)—and this regional trend is particularly noticeable in Asia (see Table B: Merchandise exports). The share of intraregional exports in developing Asia accounted for 54.6% in 2014. Other regional groups experienced a decline, except NAFTA which recorded a 4.2% increase over 1990 and 2014 period.

In East Asian countries, the share of parts and components (P&C) in exports and imports has risen from 20.2% in 1992/93 to 36.4% in 2011/12 (Athukorala 2014). In 2011/12 exports within East Asia accounted for 61% of total P&C exports; for P&C imports, the share was 53%. The increase in intensity of trade in intermediates has been particularly noticeable in Southeast Asia's trade with the

other developing East Asian economies, notably China. The Republic of Korea and Taiwan are also involved in substantial component trade with other countries in the region (Athukorala 2014).

3. Infrastructure, logistics, and the changing nature of Asian trade

As connectivity expands and the region integrates further, Asia's trade has been shifting from bulky goods towards lighter, often higher-value goods and weightless services (Hummels 2007). In particular, the ICT revolution has generated increased trade in electronics products and outsourced services, as well as greater migration of highly skilled professionals. More generally, the weight-to-value ratio of Asia's trade has been declining. Greater processing of materials or assembly of parts and components closer to the source(s) of inputs in international supply chains has shifted greater value addition and waste reduction to earlier stages of the production process. This fragmentation and relocation of production has important implications for the distance and destination of trade flows, the choice of transport mode(s), and the demand for supporting infrastructure, as well as the future connectivity of value chains in the region.

Changes in transport technology, notably improvements in air freight and containerization, have amplified these trends. Multimodal shipping and improvements in logistics services have made it possible to trade with more destinations in less time and often at lower cost. An international comparison of logistics performance finds that East Asian economies perform among the best in the world, but that there is considerable variation within the region (Figure2).

[Figure 2]

Air cargo involving Asian countries has grown much faster than in the world as a whole, with international flights within Asia experiencing particularly rapid growth (see Figure 3).

[Figure 3]

In Asia, only 1–5% of merchandise trade by value is among countries with a shared land border.[3] Nearly all goods traded with non-adjacent partners move by air or sea. When infrastructure improvements lower the marginal cost of trade, exports tend to expand in two ways: new products are exported to new destinations, typically through small shipments from small firms, and existing trade flows deepen. When the new markets or sources are inland, air transport may be a viable alternative to a combination of sea and land freight to avoid and reduce potential port congestion, and to save time.

[3] By comparison, around a quarter of world trade is between countries sharing a common border (Berthelon and Freund 2004).

Air transport has the notable advantage of speed—and advances in technology have made it cheaper over time. The cost of air freight, as measured by average revenue per ton-kilometer, has fallen by over 90% since 1955. This makes long-distance trade more profitable and expands the range of potential export markets. Trading with far-off markets is no longer much more expensive than trading with neighboring ones, making it easier to expand production networks internationally. The lower weight to value ratio of traded goods, together with declining trade costs means a lower share of trade costs in delivered goods prices.

Another factor driving the rise in air freight is that as consumers get wealthier their demand for higher quality imports rises. The demand effect of lower transport cost share in delivered price is then compounded by richer consumers' willingness to pay for particular product characteristics; producers then have an incentive to manufacture to specification, and to adjust production and shipments quickly and flexibly. In addition, the demand for timely delivery rises with income (Hummels 2009).

Meanwhile, improving seaport efficiency is a priority for boosting Asia's trade, the vast bulk of which still goes by sea. Asia (if Dubai is included) already accounts for the top 13 container ports in the world, and 15 of the top 20 (see Figure 4), but there is still room for efficiency improvements. Infrastructure improvements that raise port efficiency from the bottom 25% to the top 25% can reduce shipping costs by more than 10% (Clark et al. 2004). This is vital not just for coastal regions but also for inland areas and landlocked countries or regions whose trade passes through road and rail links to ports. With berth space in ports now a constraint on Asia's trade expansion, exploiting complementarities with other modes of transport is a particularly urgent priority. Ports can move more goods, particularly in containers, in less time when served by efficient rail, road, and inland waterway networks, ICT infrastructure, and storage yards. Meanwhile, improvements in infrastructure services lower pecuniary costs, risks of damage or losses (and so insurance costs), and can take advantage of complementarities between transport and communication (or other) infrastructure services.

Efficient and cost-effective logistics services are increasingly important for timely delivery. Improvements in infrastructure service efficiency can lead to cost savings equivalent to moving production thousands of kilometers closer to trading partners. As production supply chains become more geographically fragmented and extended, logistics can have more impact than transport on trade costs. Effective logistics services need to be complemented by ICT, soft infrastructure, and education and training.

The relative importance of different categories of infrastructure-related trade costs can be surprising. In 2009, De found that the ocean freight rate for importing a container to India was around two thirds *greater* than for exporting, while the rate for importing a container to the PRC from six Asian countries was far *lower* than for exporting. Auxiliary shipping charges (such as documentation fees, container-handling charges, and government taxes and levies) may account for much of this difference; these are sometimes greater than ocean freight charges, particularly where shipments experience congestion at ports or borders. On average, auxiliary shipping charges outweigh terminal handling charges across countries and commodities in Asia, and their variations contribute significantly to variations in trade costs. Improvement in logistics services, including better cross-country coordination, could help to lower both their average cost and their variability, boosting connectivity.

The composition of freight charges also varies significantly across countries and commodity categories. In some cases, inland freight charges are a smaller share of total freight charges than are ocean ones. Often, however, they are greater (De 2009). Countries where inland freight is particularly expensive ought to focus their infrastructure efforts on improving inland services. Looking at different commodity groups, the weight-to-value ratio is the main determinant of transport costs, suggesting that the preferred means of transporting heavier cargoes is by sea, followed by rail and then by road.[4] Landlocked countries and inland regions that export heavy goods should therefore consider prioritizing developing streamlined rail connections to efficient ports. These have the added benefit of being more environmentally friendly than roads.

The challenges of providing efficient logistical support rise as countries move into progressively more complex and higher value manufacturing, and as production processes become increasingly fragmented. The importance of high-quality logistics varies by product depending on the weight-to-value ratio, the shelf-life of the product, and the scheduling requirements of the product life-cycle. Already, there is a premium on timeliness and reliability of delivery, care and security in handling and transporting, and certification and standardization of product quality. Both the quantity and quality of logistics services in trade create competitiveness and value added. Freight forwarding, warehousing, storage, packaging, shipping services, and ICT infrastructure services are becoming increasingly important. Fortunately, competition among private sector providers of logistics services is continually stimulating efficiency improvements.

[4] Hummels and Skiba (2004) similarly found that a 10% increase in the ratio of product weight to value results in a 4% increase in ad valorem shipping costs. Hummels (2007) notes that in 1960–2004 the real value of manufacturing trade grew around 1.5% a year faster than the weight of nonbulk cargoes. Including bulk commodities, the real value of all trade grew 1.8% a year faster than its weight.

4. Connectivity and Structural Transformation

The surge in Asia's connectivity has coincided with the region's industrialization. The factors that contribute to development of global value chains have contributed to the industrialization process, and to de-industrialization through the growth of service sectors. As structural transformation occurs in a context of increasing connectivity, services and their impacts on productivity become increasingly important.

Baldwin and Forslid (2014) characterise the current wave of globalisation as having occurred in two phases. The first phase (up to the mid- or late-1980s) was driven primarily by cheaper transportation costs and allowed greater physical separation between consumption and production. The second phase was driven by improvements in ICT and is marked by the unbundling of stages of production and their dispersal to nations with cost advantages. They characterize the process as deriving a balance between fractionalization of supply chains and coordination among the links as, for example, offshoring a particular stage in the production process may save on production costs but raise coordination costs.

In the current wave of globalization, ICT is an increasingly productive complement to physical infrastructure. ICT helps to reduce the costs of locating suppliers, negotiating contracts, monitoring their implementation, and tracking the location and status of shipments. Fink et al. (2002) find that higher telecommunications costs dampen bilateral trade flows, especially for differentiated (rather than homogeneous) products. In particular, as smaller shipments of a wider variety of higher value-added products proliferate, the demand for ICT services rises. The same is true as the growth of trade in services outpaces that in manufactures. Trade in services such as banking and business services, or communications, are highly dependent on well-developed ICT infrastructure in both exporting and importing countries. While the private sector is especially adept in the ICT sector, the need for mutually interfacing logistics services at both ends of a trade route is an area where regional cooperation could help users to share information, learn from best practices, and coordinate capacity building to enhance trade.

Communication and organizational technologies lower the marginal cost of coordination, making it easier to slice up production processes into more stages and disperse stages internationally. Thus, they tend to foster the current trend in Asia toward more vertical specialization, offshoring, foreign direct investment and intra-industry trade. While internal collaboration between production segments in a particular firm is often taken for granted, it does not always happen as planned. Coordination with external suppliers and customers is even more difficult. On the other hand,

better information technology makes it easier for a worker to master more tasks without loss of efficiency, making greater specialization less necessary. Modern supply chains integrate activities faster by systematic information sharing from internal and external sources. Firms can now collect relevant information at each node along their networks. This rich data can be methodically analysed to optimise demand, supply, inventory, costs and service levels. In the process, different producers come together (voluntarily) and integrate their sourcing, manufacturing, research, development, and logistics.

In the main sectors benefiting from unbundling – electrical and mechanical machinery – fractionalized production processes involve time cost and shipping cost sensitive elements. Being near other supply chain participants – both headquarters and factories – makes it easier to join global value chains. In this context comparative advantage of the region matters as much as that of the country when it comes to joining a global value chain, and the Asian region has a strong advantage.

Bottlenecks at Asia's borders often impede the efficiency of its logistics systems. Trade facilitation—streamlining the movement of goods and services across borders—is therefore vital. Improvement in physical facilities allows shipments to move smoothly and quickly but simplification and harmonization of customs procedures is also necessary to ensure exports do not incur costly delays. Complying with export requirements can take over 20 days on average in East Asia (and over a month in South Asia) compared with half of that in the OECD (Table C). The pattern is similar for importing, although the time and cost involved are slightly greater.

[Table C]

Flexibility, as well as timeliness, will become more valuable as greater trade implies greater potential vulnerability to external shocks such as financial turmoil or sharp fluctuations in fuel or other commodity prices. Multiple shipping in supply chains raises the impacts of fuel price fluctuations. For example, Chinese steel produced with imported Brazilian iron ore for export to the US would be hit twice by higher fuel charges (three times including the cost of energy used in production). The impact is greater where the goods (or their imported components) are shipped by air or have a high weight-to-value ratio, and so where fuel accounts for a higher share of freight costs.

Trade growth along a particular shipping route encourages entry—and where permitted, new competition tends to drive down shipping margins, particularly when complemented by an effective competition policy that constrains monopoly power and removes barriers to entry (Brooks 2005). Hummels et al (2007) found that ocean liners charge much higher freight rates for goods whose

import demand is relatively inelastic, indicating that shipping firms are most likely exercising market power. In 2006, one in six importer-exporter pairs was served by a single liner service; over half were served by three or fewer.

Factors such as high freight costs, delays in customs clearance, unofficial payments, slow port landing and handling, and poor governance are particularly damaging because they impede flexibility to adjust to changing economic conditions. They are also barriers to trade, which need to be addressed through regional cooperation on trade facilitation measures. Infrastructure improvements that reduce the costs of international trade are crucial for the region to realize the full gains from recent and prospective trade liberalization. This should be a priority in negotiations on bilateral and regional trade agreements, which can provide added incentives and commitment to reform.

Baldwin and Robert-Nicoud (2008) consider a Melitz-type endogenous-growth model with heterogeneous firms and fixed costs of operation and of exporting. They find a decline in trade costs raises the cutoff productivity level needed for a firm to survive while reducing the cutoff productivity level that leads it to participate in exporting. The resulting survival selection of more productive firms increases the intensity of competition. A fall in trade costs is neutral with respect to the incentives for knowledge acquisition in the absence of fixed costs of exporting.

Tradable services have higher productivity, but are also much more intensive in skills and so cannot absorb as much labor. Low productivity (non-tradable) services cannot expand without turning their terms of trade against themselves and so are limited in the amount they can contribute to growth. With greater reliance on skills to support growth, a country's comparative advantage may be in accumulation of knowledge.

International integration affects the incentives for investment in activities that foster innovation and diffusion as well as in the productivity of those activities. The incentives for innovation may intensify or diminish with integration, depending on whether the scale effect or the competition effect is more powerful.

The structure of Asian trade has changed. In particular, China has continued to climb the value chain, reducing its need for intermediate imports. Less intra-Asian trade is required to produce the same final goods as previously as more regional supply chains are now based within China itself.

An increasingly critical factor for enhancing connectivity is the use of information and communications technologies. Digital platforms are now fundamental requirements of almost all commercial and trade activity, not simply for advanced economies or sectors, but for traditional

sectors and emerging economies. The digital economy cuts across multiple sectors, thus posing challenges for effective policy-making both domestically and internationally.[5]

5. Foreign Direct Investment and Global Value Chains

Trade, investment and production patterns are partly determined by differences in infrastructure service quality across countries. Kimura et al. (2007) found that geographical distance reduced trade in machinery parts and components much less in East Asia than in Europe. This implies that the costs of production fragmentation are substantially lower in East Asia than in Europe, contributing to differences in the speed and nature of international production and distribution network development. On the other hand, Kuroiwa (2008) found that the automotive industry in Southeast Asia is geographically concentrated, as transporting its parts and components is relatively costly. As a consequence, the share of local content rose and that of imported components declined during the 1990s, highlighting the dynamic nature of GVC development and its potential for consolidation.

Reductions in transport costs have an indirect impact on foreign direct investment (FDI) inflows by lowering the cost of spreading production across several countries in order to take advantage of their relative cost differences. Increased FDI, in turn, can further boost regional trade. If the advantages of scattering production across economies outweigh those from concentrating it, reductions in transport costs make FDI complementary to trade. For instance, in Southeast Asia's electronics industry, where components are generally small and light (relative to value added) with relatively lower transport costs, cross-border production networks proliferated. This can create a virtuous cycle of cross-border infrastructure development, trade, and investment that fosters increased trade and economic growth.

Kumar and De (2008) find that the quality of physical infrastructure connectivity can be a crucial determinant of the location of efficiency-seeking or export-oriented FDI. Tham et al. (2009) also found that FDI in Asia tends towards areas with relatively good infrastructure and amenities. Amiti and Javorcik (2008) found that access to markets and access to suppliers had four times the influence of production costs on FDI location decisions. As production networks have expanded over time, international trade reveals a hub and spoke arrangement, with hubs in Germany, US and China (or a China-Japan dual hub), as shown in Figure 5.

[Figure 5]

[5] The 2014 APEC Ministerial Declaration included an APEC Initiative of Cooperation to Promote the Internet Economy.

6. Conclusions and Outlook

The current wave of expanded connectivity has much in common with the previous (1870-1913) wave, but also important differences (such as the current wave's concentration on the Pacific rim rather than Atlantic and reduced emphasis on geographic empires). Describing the previous wave, Meissner (2015) notes "Between 1850 and 1913, transportation costs plummeted, information flows accelerated, tariffs fell, trade treaties such as free trade agreements with unconditional most-favoured nation clauses and treaty ports proliferated … many commodity prices converged and the export share of total production increased dramatically, doubling or tripling in many small, open economies … new markets opened up to international trade and previously unavailable varieties of goods became accessible. Patterns of specialisation and production processes were transformed." Many of these characteristics are familiar in today's economy, and even in the previous wave, there was significant intraindustry trade and firm-level heterogeneity.

In the current wave of globalization Asia's trade is growing in value and shrinking in weight per unit value. Exports are diversifying across new markets with smaller flows, and intraregional trade in parts and components for regional production networks accounts for a growing share of total trade. These trends underscore the need for speed, flexibility, and information. Infrastructure that facilitates connectivity along these lines will boost a country's export competitiveness and its efficient integration into the global economy.

As production becomes increasingly fragmented and traded internationally, cooperation among economies participating in production networks is becoming more important. The competitiveness of each country's production depends on the other countries in a production network as well as on the efficiency of the trading links among them. They thus have a strong incentive to cooperate with each other, particularly on improving physical and soft infrastructure to reduce the costs of trading between them.

The sequencing and complementarity of cross-border infrastructure investments are important, particularly as transport corridors develop into more diversified economic corridors. Brooks and Go (2013) found that with widespread telecommunications and road systems in place, Asian infrastructure may increasingly concentrate on railroads and energy as average income continues to rise. As more physical infrastructure is built, developing complementary soft or ICT infrastructure may be more important than further investments in transport, while maintaining (or increasing) spending on operations and maintenance. For example, once a port has been constructed, streamlining customs facilities may boost trade more than adding an additional shipping berth.

Government efforts to shape comparative advantage are also likely to vary in their efficacy according to stages of economic development. China and India, for example, have used industrial policies (and the massive size of their markets) to restructure their economies and enable them to take advantage of world markets.

Building a modern, integrated financial services system together with greater integration with capital-abundant regions, including developed Asia could increase the region's investment and trade substantially. The ASEAN Economic Community is already moving in this direction. Further intraregional integration (through increased trade, FDI, portfolio investment, and cross-border banking) could be an important source of growth, employment, and more inclusive development as well as resilience to shocks.

Changes in institutional architecture may be required to support the integrated economies arising from greater connectivity. Newer "trade" agreements are more likely to cover infrastructure services, intellectual property rights, competition and subsidies policies, rights-of-establishment, environmental and labor standards, etc.

Scale will continue to influence integration. Economies with over a billion consumers (PRC and India) can pursue policies that smaller economies cannot, leveraging their local markets for value chain segments. Incentives for regional cooperation among smaller economies may rise in response.

New institutions are arising to support greater development of infrastructure and other productive sectors. Examples include the Asian Infrastructure Investment Bank (AIIB) and the New Development Bank (formerly known as the BRICS Development Bank). The AIIB's initially authorised capital of $50 billion, is planned to be raised to $100 billion. It's 57 prospective founding members include almost every Asian economy.

As Asia connects further with trade, investment, physical infrastructure, institutions and information, the region's productivity can be expected to continue rising, raising the standard of living for the majority of the world's population.

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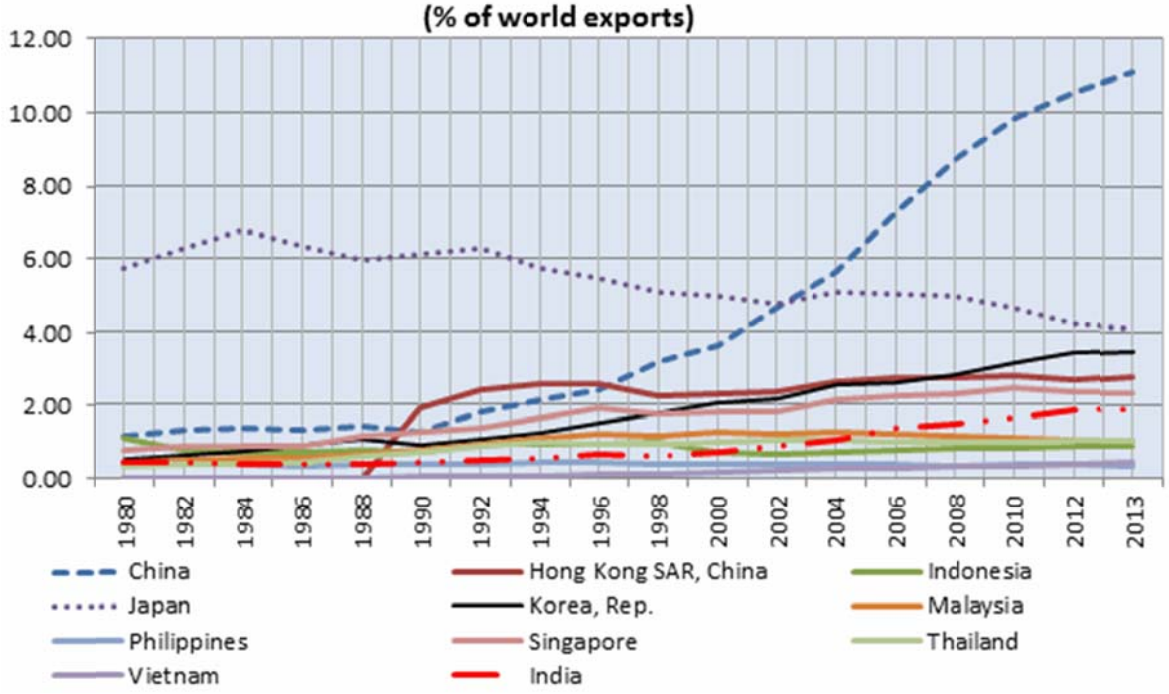
Table A. **Exports of goods and services in major economies of Asia (constant 2005 US$ bln.)**

Exports of goods and services (constant 2005 US$ bln)									
Country	**1960**	**1970**	**1980**	**1990**	**2000**	**2010**	**2013**	**Average growth rate 1990-2000**	**Average growth rate 2000-2013**
China	-	-	37.2	64.6	358.7	1584.6	2033.4	19.0	14.7
Hong Kong, China	-	-	-	97.9	230.0	451.3	508.2	9.1	6.5
India	4.2	6.5	13.6	22.6	72.5	267.9	354.3	12.7	13.4
Indonesia	9.5	14.0	33.8	37.0	69.9	131.9	161.0	7.8	6.9
Japan	19.3	73.6	180.9	314.4	491.7	747.6	755.0	4.7	3.9
Korea, Rep.	0.2	2.6	17.0	47.6	202.1	504.1	635.9	15.6	9.4
Malaysia	3.8	6.8	14.3	38.9	124.8	180.5	186.2	12.5	3.4
Philippines	3.3	5.3	13.3	18.7	39.5	62.0	64.9	8.4	4.2
Singapore	-	-	24.0	64.4	181.6	395.2	434.5	11.2	7.2
Thailand	1.5	4.0	9.9	36.0	98.9	161.0	189.4	10.8	5.4
Vietnam	-	-	-	2.6	16.0	53.8	80.8	20.3	13.5
Imports of goods and services (constant 2005 US$ bln)									
China	-	-	34.1	56.8	310.5	1262.4	1693.6	18.9	14.1
Hong Kong, China	-	-	-	93.3	229.5	430.8	495.4	9.7	6.3
India	7.48	7.24	14.2	25.5	86.4	341.5	401.3	13.4	13.1
Indonesia	2.6	4.5	22.4	34.2	56.6	111.2	136.0	7.1	7.5
Japan	24.4	113.2	192.3	346.9	498.4	592.8	681.4	3.9	2.6
Korea, Rep.	1.2	6.5	26.1	74.2	208.0	436.9	519.8	11.8	7.6
Malaysia	3.5	5.2	13.7	33.3	98.4	154.5	171.5	12.3	4.7
Philippines	3.7	6.2	13.9	20.8	42.5	64.2	70.6	7.9	4.2
Singapore	-	-	23.1	58.7	168.7	342.3	375.6	11.5	6.7
Thailand	2.7	8.9	16.6	49.3	91.5	147.6	182.5	7.4	5.9
Vietnam	-	-	-	3.4	16.8	63.7	84.9	18.1	13.6

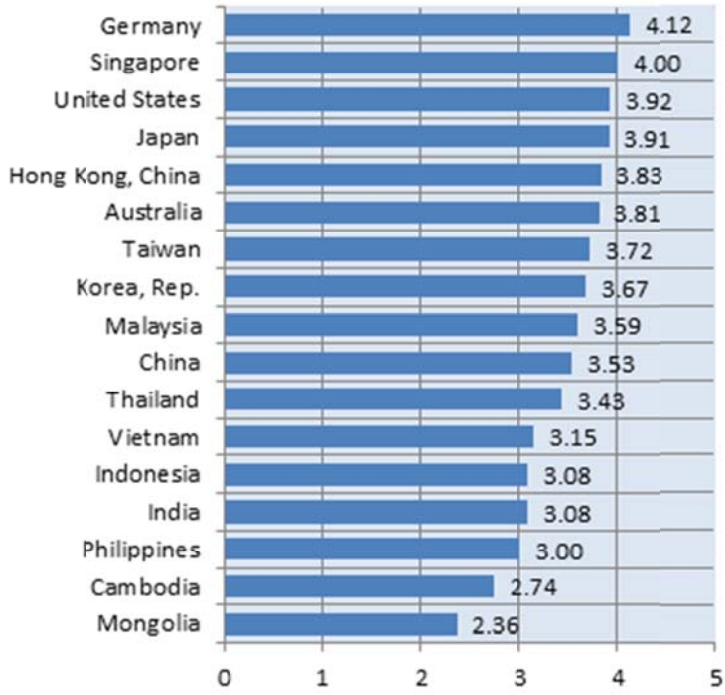
Source: WDI (2015)

Figure 1. **Exports of goods and services, annual, 1982-2013 (% of world exports)**



Source: WDI (2015)

Figure 2. **Logistics Performance Index**



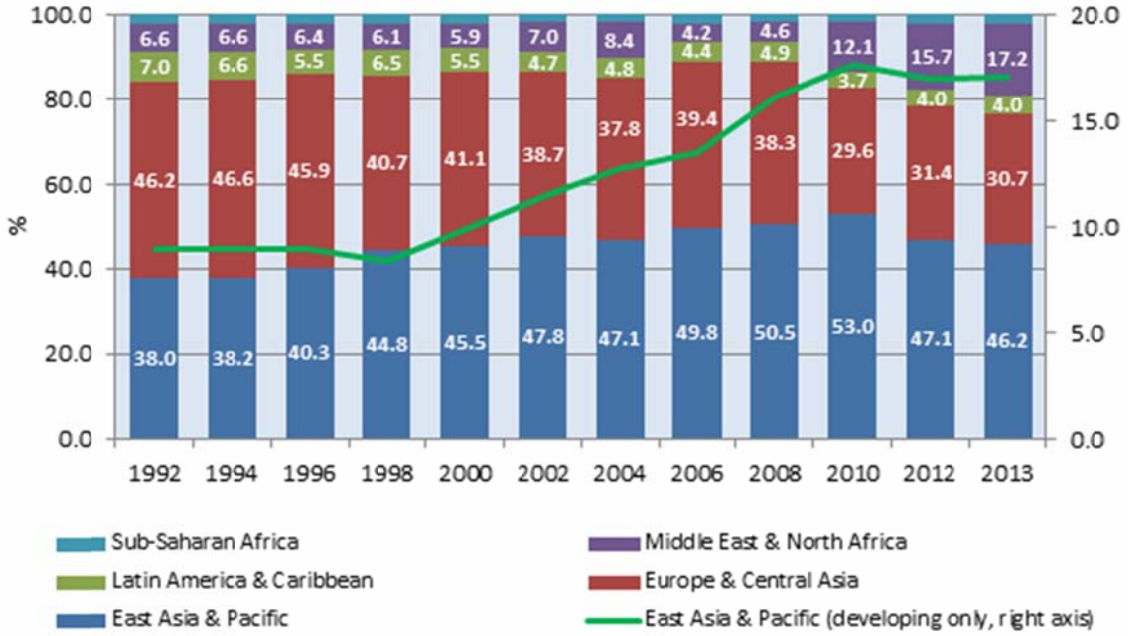
Source: World Bank (2014) "Connecting to Compete: Trade Logistics in the Global Economy", World Bank's Economic Policy, Debt, and Trade Department Report

Table B. **Merchandise Exports: Intra-trade and extra-trade of country groups, 1995-2014**

		Total Merchandise Exports in current bln $US					Share of World Trade %					Share of intraregional exports in total %				
		1995	2000	2005	2010	2014	1995	2000	2005	2010	2014	1995	2000	2005	2010	2014
World		5120.7	6383.6	10458.9	15241.2	18882.1	100.0	100.0	100.0	100.0	100.0					
Asia	**Total**	**1558.4**	**2059.1**	**3581.4**	**5931.2**	**7726.4**	**30.4%**	**32.3%**	**34.2%**	**38.9%**	**40.9%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Extra-trade	734.4	997.8	1583.0	2380.7	2952.8	14.3%	15.6%	15.1%	15.6%	15.6%	47.1%	48.5%	44.2%	40.1%	38.2%
	Intra-trade	824.0	1061.3	1998.4	3550.6	4773.6	16.1%	16.6%	19.1%	23.3%	25.3%	52.9%	51.5%	55.8%	59.9%	61.8%
Developing economies: Asia	**Total**	**1083.6**	**1530.8**	**2895.1**	**4995.6**	**6828.2**	**21.2%**	**24.0%**	**27.7%**	**32.8%**	**36.2%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Extra-trade	625.0	896.0	1554.2	2409.2	3101.1	12.2%	14.0%	14.9%	15.8%	16.4%	57.7%	58.5%	53.7%	48.2%	45.4%
	Intra-trade	458.6	634.8	1340.9	2586.4	3727.1	9.0%	9.9%	12.8%	17.0%	19.7%	42.3%	41.5%	46.3%	51.8%	54.6%
Euro area	Total	**1711.7**	**1861.5**	**3165.9**	**4028.0**	**4719.5**	**33.4%**	**29.2%**	**30.3%**	**26.4%**	**25.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Extra-trade	824.9	896.0	1529.7	2059.2	2573.4	16.1%	14.0%	14.6%	13.5%	13.6%	48.2%	48.1%	48.3%	51.1%	54.5%
	Intra-trade	886.7	965.5	1636.2	1968.8	2146.1	17.3%	15.1%	15.6%	12.9%	11.4%	51.8%	51.9%	51.7%	48.9%	45.5%
NAFTA	Total	**853.6**	**1223.7**	**1479.1**	**1962.0**	**2493.0**	**16.7%**	**19.2%**	**14.1%**	**12.9%**	**13.2%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Extra-trade	460.7	542.5	654.6	1006.7	1242.6	9.0%	8.5%	6.3%	6.6%	6.6%	54.0%	44.3%	44.3%	51.3%	49.8%
	Intra-trade	392.9	681.3	824.5	955.3	1250.5	7.7%	10.7%	7.9%	6.3%	6.6%	46.0%	55.7%	55.7%	48.7%	50.2%
OECD	Total	**3792.2**	**4543.2**	**6861.2**	**9063.4**	**10676.4**	**74.1%**	**71.2%**	**65.6%**	**59.5%**	**56.5%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Extra-trade	871.4	885.2	1522.2	2605.9	3136.8	17.0%	13.9%	14.6%	17.1%	16.6%	23.0%	19.5%	22.2%	28.8%	29.4%
	Intra-trade	2920.7	3658.0	5339.0	6457.5	7539.6	57.0%	57.3%	51.0%	42.4%	39.9%	77.0%	80.5%	77.8%	71.2%	70.6%
America	Total	**1005.9**	**1421.6**	**1851.3**	**2551.8**	**3182.2**	**19.6%**	**22.3%**	**17.7%**	**16.7%**	**16.9%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Extra-trade	470.2	542.4	715.7	1141.7	1386.8	9.2%	8.5%	6.8%	7.5%	7.3%	46.7%	38.2%	38.7%	44.7%	43.6%
	Intra-trade	535.7	879.2	1135.6	1410.1	1795.4	10.5%	13.8%	10.9%	9.3%	9.5%	53.3%	61.8%	61.3%	55.3%	56.4%
Europe	Total	**2373.0**	**2672.9**	**4590.4**	**5997.3**	**7128.4**	**46.3%**	**41.9%**	**43.9%**	**39.3%**	**37.8%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Extra-trade	666.8	723.8	1188.1	1728.3	2173.4	13.0%	11.3%	11.4%	11.3%	11.5%	28.1%	27.1%	25.9%	28.8%	30.5%
	Intra-trade	1706.2	1949.2	3402.3	4269.0	4955.1	33.3%	30.5%	32.5%	28.0%	26.2%	71.9%	72.9%	74.1%	71.2%	69.5%
Oceania	Total	**72.3**	**82.8**	**134.3**	**246.7**	**292.0**	**1.4%**	**1.3%**	**1.3%**	**1.6%**	**1.5%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
	Extra-trade	63.0	73.1	117.9	225.3	270.3	1.2%	1.1%	1.1%	1.5%	1.4%	87.1%	88.4%	87.8%	91.3%	92.6%
	Intra-trade	9.3	9.6	16.4	21.4	21.7	0.2%	0.2%	0.2%	0.1%	0.1%	12.9%	11.6%	12.2%	8.7%	7.4%

Source: UNCTAD (2015): http://unctadstat.unctad.org/wds/TableViewer/tableView.aspx

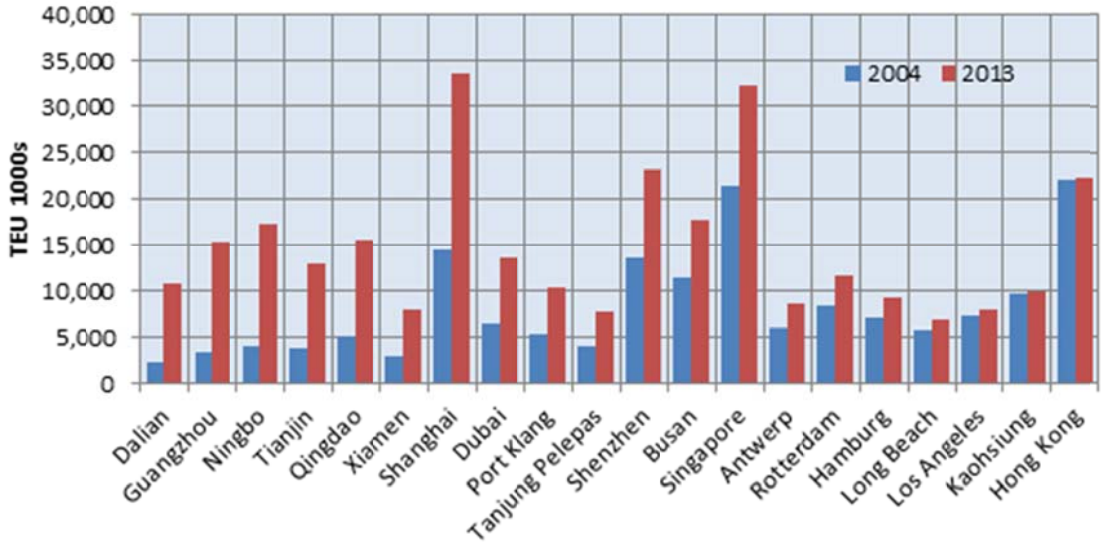
Figure 3. **Distribution of air transport, freight (million ton-km)**



Source: WDI (2014); Author's calculations;

Note: Eastern Asia and Pacific developing includes American Samoa, Myanmar, Cambodia, Palau, China, Papua New Guinea, Fiji, Philippines, Indonesia, Samoa, Kiribati, Solomon Islands, Korea, Dem. Rep.,Thailand,Lao PDR, Timor-Leste, Malaysia, Tonga, Marshall Islands, Tuvalu, Micronesia, Fed. Sts.,Vanuatu, Mongolia, Vietnam

Figure 4. **World's Top 20 Container Ports**



Source: IAPH (2014), World Container Traffic Data 2014; Ranking is based on the highest percentage change between 2004 and 2013.

Table C.

Border Trade Costs, 2014

EconomyName	Documents to export (number)	Time to export (days)	Cost to export (US$ per container)	Documents to import (number)	Time to import (days)	Cost to import (US$ per container)
East Asia & Pacific	6.1	20.2	864	6.7	21.6	895.6
Europe & Central Asia	6.9	23.6	2,154.50	8	25.9	2,435.90
Latin America & Caribbean	5.7	16.8	1,299.10	6.8	18.7	1,691.10
Middle East & North Africa	6	19.4	1,166.30	7.8	23.8	1,307.00
OECD high income	3.8	10.5	1,080.30	4.3	9.6	1,100.40
South Asia	8.1	33.4	1,922.90	9.4	34.4	2,117.80
Sub-Saharan Africa	7.6	30.5	2,200.70	8.9	37.6	2,930.90

Source: WB Doing Business Report, 2014

Figure 5. **Network Trade**