

Reassessing Korea-China-Japan Trade Structure

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I. The Need to Analyze Trade in Value-added

The globalization of the value chain has rapidly intensified since 2000. Considering how often intermediate goods crisscross borders these days before final assembly is completed, a more appropriate label for them is “Made in the World” rather than “Made in Korea” or “Made in China.”

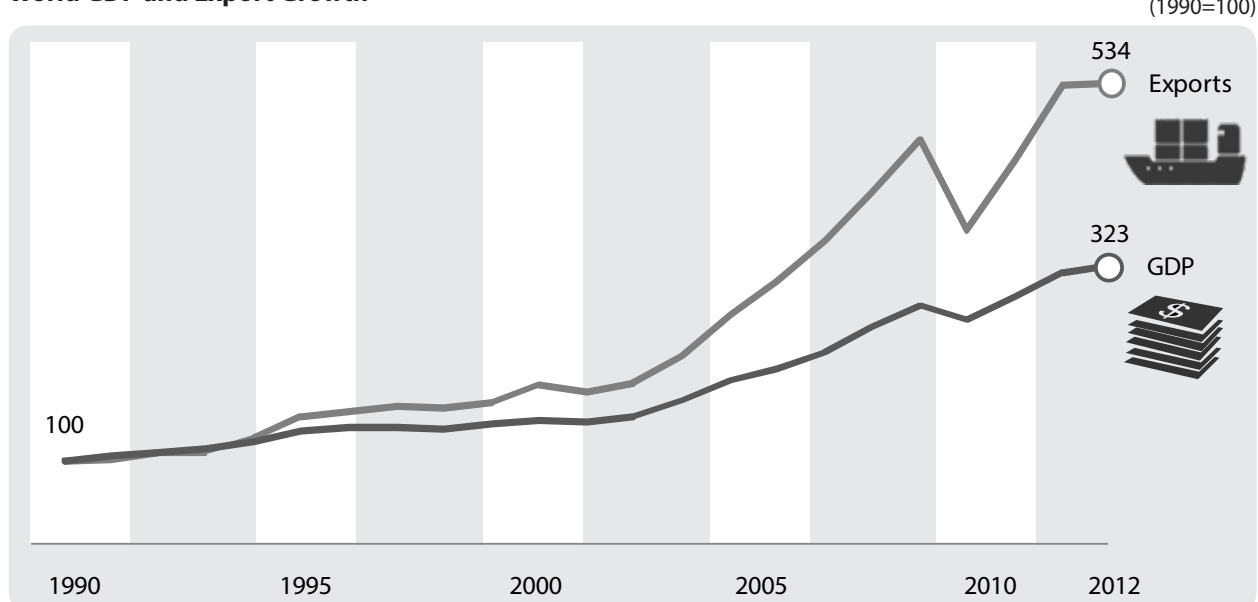
This international dispersal of production also affects traditional trade statistics, which record the total value of goods passing through customs. Trade of intermediate goods exaggerates the statistics because value-added is double counted. For example, if Korea imports US\$400 worth of intermediate goods from Japan, and turns them into a finished good that is sold to China for US\$1,000, the initial US\$400 is counted again for a trade total of US\$1,400. However, in terms of actual value-added the total is US\$1,000 -- US\$400 in Japan and US\$600 in Korea. As a result of this redundant counting,

world trade is outpacing GDP. While the world’s nominal GDP increased to 3.2 times that of 1990 by 2012, world exports swelled 5.3 times.

GDP refers to the aggregate value-added that a country produces during a specified period of time. When a country exports, only value-added that it produced itself contributes to GDP. The value of intermediate goods imported is excluded. Existing input-output tables show the flow of intermediate goods within a country, but not the origin of the goods. To fill the information void, the OECD and World Trade Organization (WTO) in May released tables that integrated input-output and trade data. By using these tables, intermediate goods can be identified by industry and country of origin, enabling analysis of the flow of international value-added moving through the value chain.

China became the world’s factory after it joined the WTO on December 11, 2001. Between 2001 and 2012,

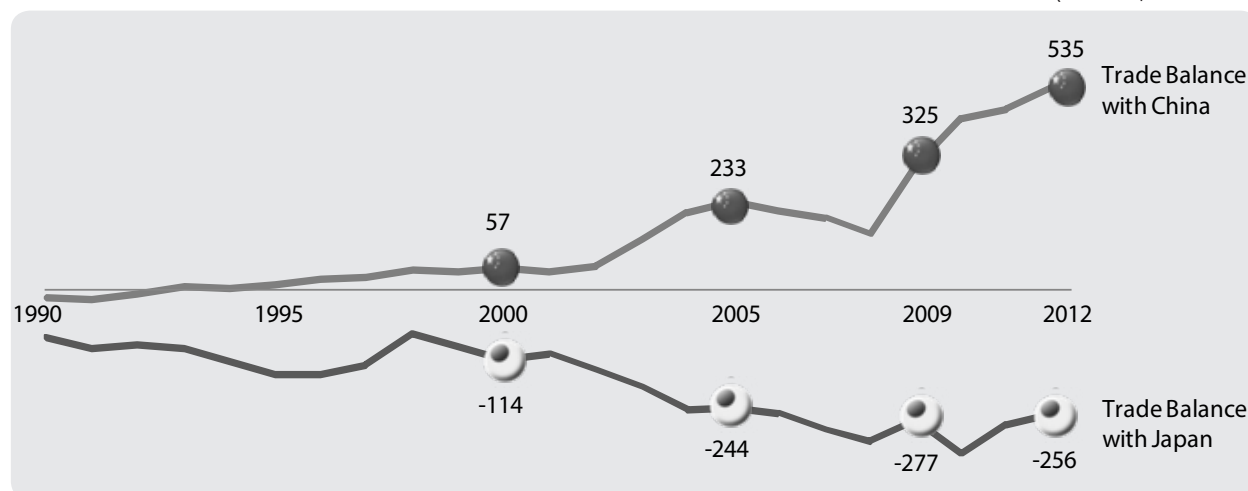
World GDP and Export Growth



Source: World GDP data are from International Monetary Fund World Economic Outlook.; world exports are from World Trade Organization.

Korea's Trade Account Balance with China and Japan

(Unit: US\$100 million)



Source: Korea International Trade Association.

China's trade with the world grew at an annual average rate of 20.2% and trade within Northeast Asia benefited handsomely.

Korea's trade with China rose 6.8 times from US\$31.5 billion in 2001 to US\$215.1 billion in 2012. In 2004, China replaced the US as Korea's No. 1 trade partner. Trade between Korea, China and Japan ballooned from US\$124.1 billion in 1995 to US\$650.9 billion in 2012. During this period, Korea's trade surplus with China sharply increased and its trade deficit with Japan expanded. This implies that the region's division of labor -- Japan's core components + Korea's intermediate goods + China's labor -- is intensifying. However, this stream of value-added cannot be easily identified with conventional trade statistics. This paper analyzes it with the new OECD-WTO Trade in Value-Added (TiVA).¹

II. Reassessment of Korea-China-Japan Trade Structure

¹ In May 2013, the OECD and WTO released input-output tables for 57 countries. The data covers 18 industries in 1995, 2000, 2005, 2008 and 2009. This paper analyzes four years, excluding 2008.

1. China's processing exports weaken since mid-2000s

Conventional trade statistics assume that China primarily performs final assembly for Korean and Japanese industries. However, based on the OECD-WTO TiVA, the share of value-added produced in China for trade has increased since 2005, implying that China's assembler role is fading.

The share of domestic value-added in China's exports declined to 63.6% in 2005 after reaching 88.1% in 1995, but rebounded to 67.4% in 2009. In contrast, the value-added contributed by Korea and Japan to China's exports fell in 2009 after peaking in 2005. In other words, between 2005 and 2009, while Korea's exports to China sharply increased and trade surplus with China expanded, Korea's importance in processing trade (i.e., Korean intermediates assembled in China into final goods for exports to a third country) declined. Since 2000, the industries where Korea's value-added share has had the biggest presence in China's exports were electrical, electronics and optical devices: the share of Korea's value-added to China's exports in these industries was 7.8% in 2005, higher than 6.3% for Japan. However, Korea's share in these industries dropped to 6.7% in 2009,

Share of Domestic and Foreign Value-added in China's Exports

(Unit: %)

	China	Korea	Japan	Taiwan	US	EU	Other
1995	88.1	1.1	2.4	1.1	1.8	1.6	3.9
2000	81.2	1.8	4.0	1.7	2.5	3.1	5.8
2005	63.6	3.7	5.7	3.1	3.8	5.9	14.1
2009	67.4	2.9	4.4	2.2	3.6	5.3	14.1

Source: OECD, TiVA.

Share of Domestic and Foreign Value-added in Korea's Exports

(Unit: %)

	Korea	Japan	China	Taiwan	US	EU	Other
1995	76.3	5.9	1.0	0.5	4.5	3.7	8.1
2000	67.1	6.7	1.8	0.6	6.4	3.9	13.4
2005	62.3	5.8	3.3	1.2	4.9	5.7	16.9
2009	59.4	5.1	4.8	1.1	4.6	5.3	19.8

Source: OECD, TiVA.

showing the same downward trend as that of Korea's total value-added share in China's exports.

The share of value-added from Japan in China's exports rose to 5.7% in 2005 from 2.4% in 1995, but fell to 4.4% in 2009. But according to conventional trade statistics, the ratio of Japan's exports to China's total exports has steadily declined: from 14.7% in 1995 to 12.2% in 2000, to 10.5% in 2005, and to 9.1% in 2009. In short, until 2005, Japan exported its value-added to China via a third country such as Korea, instead of directly to China.

2. Korea's export reliance on Japan weakens since the 2000s

Japan's value-added share in Korea's exports rose from 5.9% in 1995 to 6.7% in 2000 and fell to 5.1% in 2009. This means that despite Korea's widening trade deficit with Japan, Korean exports' Japan reliance has been receding since 2000 in terms of value-added. In gross terms, the ratio of Japan's exports to Korea to Korea's total exports has fallen steadily, from 26.1% in 1995 to 18.5% in 2000, to 17% in 2005 and to 13.6% in 2009. This implies that between 1995 and 2000, Japan increased value-added exports to Korea indirectly.

In contrast, China's value-added share in Korea's exports has continuously increased, from 1% in 1995 to 4.8% in 2009. This is an opposite trend compared to Korea's rising trade surpluses with China in gross terms. In 2009, Korean exports of agriculture and fisheries products and food and beverage industries have had a par-

ticularly high share of Chinese value-added.

3. Domestic value-added in Korea's exports falls steadily

Despite diminishing reliance on Japan in value-added terms, Korea's overall overseas dependence on exports is rising. In Korea's total exports, the share of value-added produced domestically fell from 76.3% in 1995 to 59.4% in 2009. To this end, exports of textile and shoe industries, whose share of value-added generated within Korea is over 80%, plunged from 7.3% in total Korean exports in 1995 to 1.6% in 2009. Outbound shipment of electrical, electronics and optical devices, where domestic value-added share is more than 70%, also declined from 16.2% in 1995 to 13% in 2009. Meanwhile, rising international oil and raw materials prices appear to have contributed significantly to raising Korea's dependence on foreign value-added. The share of exports of mineral resources, which include oil products, surged to 11.9% of total Korean exports in 2009 from 3.9% in 1995, but the value-added content created in Korea was just 1.9% in 2009. Meanwhile, between 2000 and 2009, value-added generated from resource-rich countries such as Saudi Arabia and Russia increased in Korea's total exports.

Consequently, Korea's share of world exports is steadily rising in gross terms, but falling in value-added terms. In gross terms, Korea's share of world exports rose from 2.4% in 1995 to 2.9% in 2009, but in value-added terms fell from 2.5% to 2.3% over this period. This means while Korea's exports expanded, its reliance on value-added produced from other countries rose.

Share of Countries in Global Exports

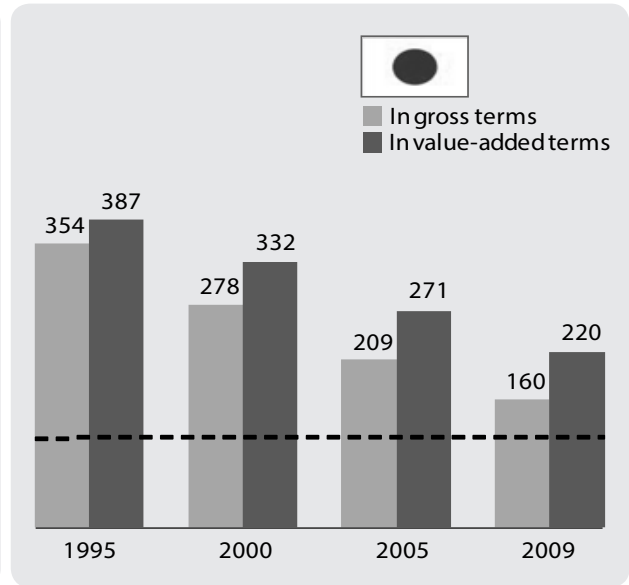
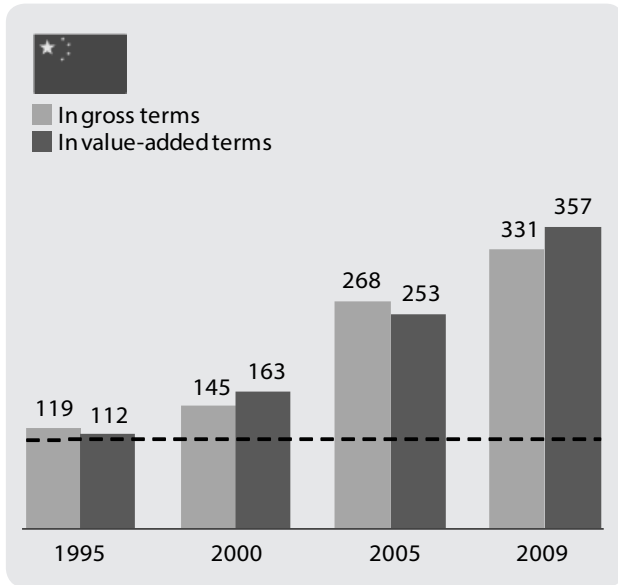
(Unit: %)

	Korea		China		Japan	
	Gross	Value-added	Gross	Value-added	Gross	Value-added
1995	2.4	2.5	2.9	2.8	8.6	9.6
2000	2.7	2.5	3.9	4.1	7.4	8.4
2005	2.7	2.4	7.3	6.1	5.7	6.6
2009	2.9	2.3	9.6	8.3	4.6	5.1

Source: OECD, TiVA; WTO.

Exports of China and Japan Compared to Korea

(Korea=100)



Source: OECD, TiVA; WTO.

4. Export gap with China widens and that with Japan narrows

China is widening its export gap with Korea in both gross and value-added terms. The gross exports of China were 1.2 times that of Korea in 1995 and rose to 3.3 times by 2009. The figure increased from 1.1 times to 3.6 times during the same period for value-added terms.

There is somewhat a different trend when comparing Korea's and Japan's exports. Korea is quickly catching up with Japan in gross terms but a wide gap still persists in value-added terms. Japan's total exports in 2009 were 1.6 times those of Korea, and 2.2 times in value-added terms.

5. Korea's trade balance improves in value-added terms

Thanks to its trade surplus with China, Korea's trade surplus in the global market has steadily increased since 2000 in both gross and value-added terms. In gross terms, Korea had a US\$10.1 billion trade deficit in 1995. A series of up and down years ensued but by 2009, Korea had a US\$40.4 billion surplus. Trade balance based on value-added also improved from US\$2.8 billion deficit to US\$30.9 billion surplus during the same period.

Surplus with China widened from US\$1.7 billion in 1995 to US\$32.5 billion in 2009, in gross terms. Based on value-added, the figure increased from US\$3.3 billion to US\$11.7 billion in that period. The data show that the improvement is weaker in value-added than in gross terms. This is due to a steady decline in value-added that the Korean economy injected into its exports, whereas val-

ue-added created in China for China's exports increased.

There was a different pattern in Korea's trade with Japan. Since 2005, Korea's trade deficit with Japan has widened in gross terms but narrowed in value-added terms. The deficit with Japan worsened from US\$24.4 billion in 2005 to US\$27.7 billion in 2009 in gross terms and improved slightly from US\$8.1 billion to US\$6.4 billion. This implies that Korean export's dependence on Japan in value-added terms has fallen since 2000 and thus trade balance has improved since 2005.

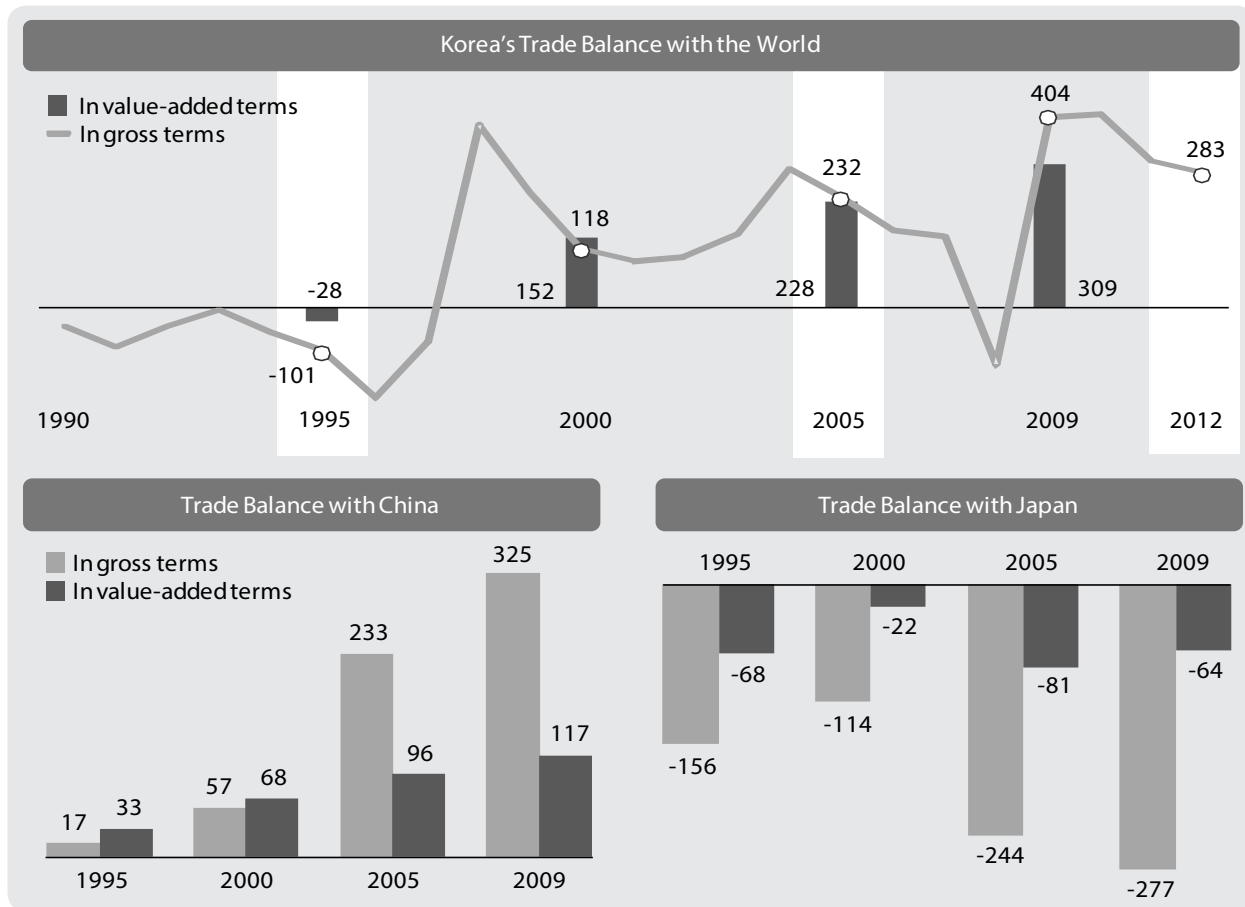
III. Implications

The key take-away from the TiVA statistics on Korea, China and Japan is the changing role of China. In the latter half of the 2000s, China's own value-added input in its exports rose while value-added produced in Korea and Japan declined. This means that China is shifting away from being the world's assembly factory. Moreover, with China shifting from export-led growth toward consumption-led growth, it will further reduce reliance on intermediate inputs from other countries.

Consequently, Korea needs to bolster the competitive edge of its own finished goods sent to the Chinese consumer market, which is driven by a mushrooming middle class. Raising the value-added of Korean intermediate goods and materials used in final goods for China's domestic market is also crucial. As for final demand (consumption and investment) in China, the share of Korean value-added fell from 7.4% in 2000 to 5.7% in 2009.

Korea's Trade Balance in Gross and Value-added Terms

(Unit: US\$100 million)



Source: OECD, TiVA; Korea International Trade Association.

Meanwhile, domestically generated value-added contained in Korea's exports should be expanded. The reliance on Japanese intermediate goods in total Korean exports has been falling, contrary to expectations, but dependence on intermediate goods produced in other countries such as China increased. To raise domestic value-added share, R&D should be promoted constantly

to improve competitiveness in core technologies. "Production input" services such as product planning, design and legal assistance, are promising. In addition, the service sector should look beyond the domestic market, and actively seek overseas expansion to strengthen competitiveness and raise the value-added of itself. SERI