

# Exploring the Intensive and Extensive Margins of the Recent China-North Korea Trade

ISSN 2233-9140

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## 1. Background

North Korea's dependence on trade with China is increasing due to economic sanctions imposed by the international community. Out of North Korea's total international trade excluding inter-Korean trade, the portion of the trades with China has risen from 32.7% in 2002 to 89.1% in 2013.

At the March 31st 2013 plenary meeting of the Central Committee of the Korean Workers' Party, North Korea has demonstrated its intention to reduce its dependence on trade with China by emphasizing 'trade diversification.' However, China continues to main-

tain a stable relationship with North Korea in consideration of the latter's geopolitical importance and strategic value. Chinese president Xi Jinping has recently emphasized the importance of China-North Korea relations, citing that the bilateral relationship is built on a 'nation-to-nation' basis rather than 'government-to-government.' This indicates that China-North Korea relations will not change despite changes in governments but will likely continue. He also mentioned that while the United States is a nation that shares common interests with China, North Korea shares a 'common destiny' with China.

This paper examines what factors have bo-

osted the China-North Korea trade, which has great significance for North Korea's international trade in general.

## 2. Recent Trends and Key Characteristics of the China-North Korea Trade

In 2013, North Korea's exports to and imports

from China grew by 17.2 percent and 5.4 percent year-on-year, reaching US\$ 2.91 billion and US\$ 3.63 billion respectively. Meanwhile, North Korea's imports from China have exceeded exports to China, and this trend continued in 2013. However, North Korea's recorded trade deficit with China in 2013 was US\$ 720 million, which was US\$ 240 million less than that of 2012, as trade exports expanded rapidly compared to imports.

Figure 1. China's Trade with North Korea

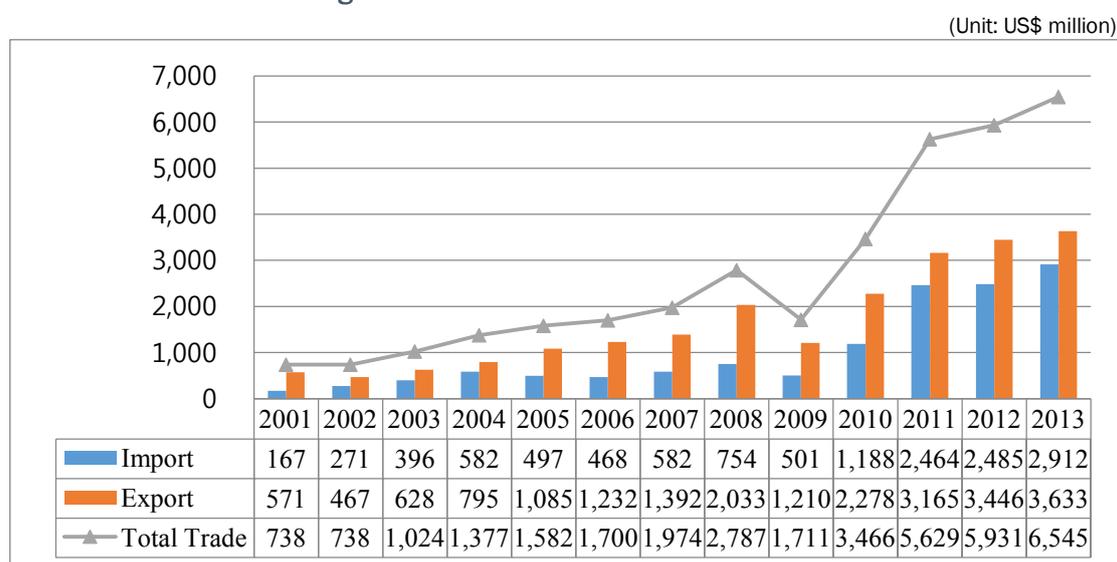
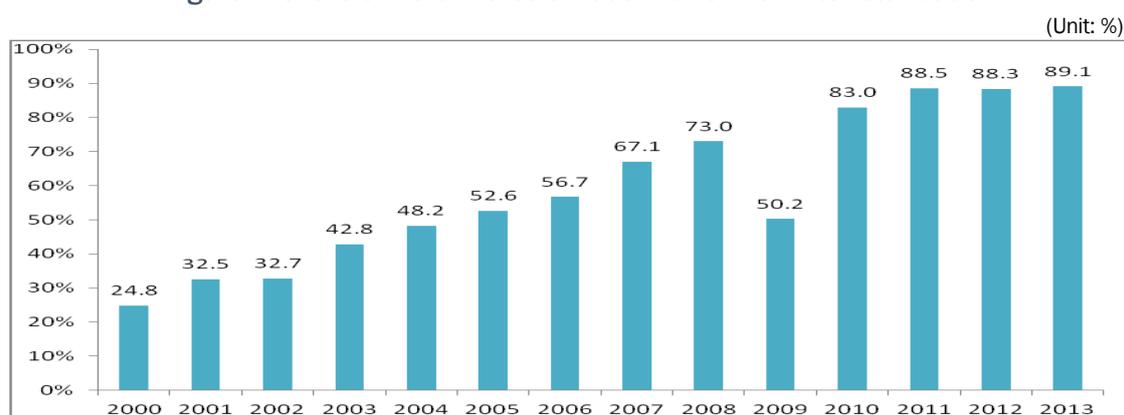


Figure 2. Share of North Korea's Trade with China in its Total trade



Note: 1. Some statistics for 2009 are omitted

2. The share of North Korea's trade with China in its total trade excludes inter-Korean trade

Source: KITA trade statistics ([www.kita.net](http://www.kita.net)); KOTRA. 2013 North Korea's Trade Trend.

Extraction of crude petroleum and natural gas accounted for the largest share of Chinese exports to North Korea with 16.5 percent in 2013, followed by textiles (14.6 percent), food & beverages (9.8 percent) and machinery and equipment (6.6 percent). During the analysis period, extraction of crude petroleum and natural gas was the biggest export item of China to North Korea. Textiles, which accounted for 6.6 percent of total exports in 1992, grew rapidly to rank second among exports in 2013. Food & beverages exports to the North showed some fluctuations depending on the year but continued to take up a large portion of total exports.

In terms of China's imports from North Korea, coal and lignite was the biggest import item with 50 percent, followed by apparel, dressing and dyeing of fur (18.9 percent), metal ores (14.2 percent) and basic metals (7.5 percent). From an annual perspective, share of imports by industry fluctuated significantly, indicating that North Korea had a weak industrial structure. Imports of basic metals from North Korea to China were of great importance in 1992 with 47 percent. However, imports of fishing and mining of coal and lignite grew rapidly, reaching 40.9 percent in 2002 and 47.4 percent in 2013 respectively.

Examining China's export products to North Korea in 2013 at the product level, semi-finished goods represented the largest share with 38.7 percent whereas primary and consumer goods comprised the largest percentages among China's import products from North Korea with 63.7 percent and 25.7 percent, respectively.

As such, the China-North Korea trade was largely dependent on certain industries and product levels; however, this is insufficient evidence in determining the factors have boosted the trade increase, quantity, price or diversification of products. In this regard, in section 3, we decompose the changes in trade with a view to figuring out which factors have played a role and

to what extent, in light of the changes.

### 3. Decomposing the China-North Korea Trade

In general, intensive margin in trade refers to change in trade value caused by changes in quantity and price of a single item whereas extensive margin in trade are related to the number of trading items. Therefore, intensive margin can be broken down into quantity and price effects, while extensive margin can be decomposed into product entry and exit effects.

By using the methodology of Haddad, Harrison and Hausman (2011), this paper decomposes the trade increase in the China-North Korea trade into changes in prices, quantities, as well as entry and exit.

#### A. Decomposing Chinese Exports to North Korea

China's export items to North Korea shrank by 20 from the previous year to 2,922 in 2012 (in terms of HS 6 digits). New products in 2012 were 326, whereas products that no longer exported were 346.

The increase in both quality and unit price per item can be attributed to the growth of China's exports to North Korea, but the effect of quantity growth was stronger than that of price increase. The effects of quantity and unit price per item were translated into US\$ 132.8 million and US\$ 51.4 million respectively, growth by 5.2 percent and 2 percent, respectively, from a year earlier.

Product exits (346) outnumbered new products (326), but in terms of trade value, the effect of product entry was greater than that of product exit. Export value of new products in 2012 reached USD 51.7 million, whereas product ex-

its accounted for USD38.5 million, creating a net value of USD13.2 million.

On balance, the changes in China's exports to North Korea were analyzed as being influenced primarily by intensive margins. In absolute terms, China's exports to North Korea in 2012 grew to US\$ 227.3 million in total by intensive margins (price and quantity effects plus absolute value of the unclassified) while the export amounts associated with extensive margins, such as new product and product exit rose by a relatively paltry US\$ 90.2 million. As a result, Chinese exports to North Korea in 2012 grew by 9.4 percent from the previous year, and when decomposed, the effects of quantity, product entry, and price are 5.2 percent, 2 percent, and 2 percent respectively, while the effect of product exit was negative 1.5 percent.

## B. Decomposing China's Imports from North Korea

The number of items imported to China from North Korea in 2012 was 593, an increase of 85 from the previous year. In 2012, 230 new products were imported to China, whereas 145 North Korean products already existed in the Chinese market. On balance, the effect of new product entry into China was greater than the effects of product exits.

The growth of China's imports from North Korea was primarily driven by quantity expansion, while price effect served as a negative factor due to the decline of unit price. The amount of imports driven by quantity expansion was US\$ 28.3 million, while reduction in value of imports caused by the fall in unit price was US\$ 9.9 million.

**Table 1. 2012 China-North Korea Trade Decomposition**

(Unit: US\$ million, %, Y-on-Y)

		Exports			Imports		
		Number of Items	Changes in Export Value	% Change	Number of Items	Changes in Import Value	% Change
Intensive Margins	Quantity Effect	2,068	132.8	5.2	347	28.3	1.6
	Price Effect		51.4	2.0		-9.9	-0.6
	Unclassified	528	43.1	1.7	16	0.4	0.0
Extensive Margins	Product Entries	326	51.7	2.0	230	23.9	1.4
	Product Exits	346	-38.5	-1.5	145	-9.6	-0.5
Total		2,922(▼20)	240.5	9.4(11.6)	593(▲85)	33.1	1.9(1.1)

Note 1. All in real terms.

2. Numbers in the parentheses are % change of nominal export value year-on-year.

3. Unclassified are those whose unit quantity is different every year or is not based on weight

Source: UNCTAD database.

Changes in China's imports from North Korea were more attributable (in relative terms) to intensive margins rather than extensive ones, but the contribution gap between intensive and extensive margins was not noticeably greater than in the case of China's exports to North Korea. In absolute value terms, intensive margins account-

ed for US\$ 38.6 million in total value while extensive margins accounted for US\$ 33.5 million. As a result, China's imports from North Korea in 2012 grew by 1.9 percent, and when broken down into individual effects, quantity and product entry accounted for 1.6 percent and 1.4 percent respectively, while price and product exit

worked against it, with figures of negative 0.6 percent and 0.5 percent respectively.

Considering North Korea's heavy dependence on China for trade, there is need for further analysis to figure out which margins, in the long term, are driving the China-North Korea trade, which was primarily determined by intensive margins in the short term.

### C. Decomposing Changes in China's Imports from North Korea during 1992-2012

The result of analyzing the factors of change in China's imports from North Korea during 1992-2012 is shown in Table 2. Intensive margins were the primary force that drove the growth of imports from North Korea during the period, and quantity played a larger role than price in this regard. The quantity expansion and price hike each attributed to the increase of import value by USD\$ 910 million and US\$ 240 million, respectively.

Meanwhile, entry of new products into the market increased import values by US\$ 52 million, which is less than the amount of increase via intensive margins. In the case of China's imports from North Korea, intensive margins served to increase import value by approximately US\$ 1.1656 billion, much greater than the amount of increase (US\$ 520 million) as a result of new product entry. As such, intensive margins make greater contribution than extensive margins in terms of value of imports from North Korea, although extensive margins outplay intensive margins regarding the number of items during the period between 1992 and 2012.

In conclusion, the growth of China's imports from Vietnam and Laos are largely attributable to extensive margins, while the increase in China's imports from Myanmar was driven by intensive margins, as was the case of North Korea.

**Table 2. Comparison of factors of increase in China's Imports from North Korea, Vietnam, Laos and Myanmar from 1992 to 2012**

(Unit: US\$ million, % change compared to figures in 1992)

Classification		North Korea			Vietnam		
		Items	Import Value Change	% Change	Items	Import Value Change	% Change
Intensive Margins	Quantity Effect	54	913.5	357.8	63	2,173.6	1,820.4
	Price Effect		242.6	95.0		613.0	513.4
	Unclassified	18	9.5	3.8	20	417.7	324.5
Extensive Margins	Product Entries	521	522.2	204.5	1,562	8,311.0	6,960.5
	Product Exits	162	-151.4	-59.3	46	-15.1	12.6
Total			1,536.4	601.8(1,509.8)	1,645(▲1,516)	11,500.2	9,631.4(2,221.6)
Classification		Laos			Myanmar		
		Items	Import Value Change	% Change	Items	Import Value Change	% Change
Intensive Margins	Quantity Effect	10	304.5	5,039.4	51	532.9	247.2
	Price Effect		-122.9	-2,033.3		-216.7	-100.5
	Unclassified	1	0.5	6.6	11	147.7	68.5

Extensive Margins	Product Entries	129	378.8	6,269.1	204	307.8	142.8
	Product Exits	52	-2.9	-48.5	105	-57.8	-26.8
Total			558.0	9,233.2(21,251.4)	371(▲99)	713.90	330.1(900.0)

Note 1. All in real terms.  
 2. Numbers in the parenthesis in items section indicate changes in the number of items compared to those in 1992.  
 3. Numbers in the parentheses in % change section are % change of nominal export value from that of 1992.  
 3. Unclassified are those whose unit quantity is not based on weight or are different every year

Source: UNCTAD database.

## 4. Summary & Implications

This paper examined and analyzed recent trends of the China-North Korea trade using intensive and extensive margins. By doing so, this paper identified the following characteristics.

First, China continued to post trade surplus against North Korea in 2013, but the amount of surplus fell by US\$ 240 million from the previous year since imports grew much faster than exports in relative terms. Second, semi-finished goods (textiles, food & beverages and chemicals) and primary goods (crude petroleum) took up the most of China's exports to North Korea, while imports from North Korea were primary goods (mining of coal and lignite, mining of metal ores), and consumer goods (apparel, dressing and dyeing of fur, food & beverages, textiles). Third, changes in the value of exports to North Korea are mainly driven by intensive margins, with the effect of quantity far outstripping that of price. Fourth, intensive margins made strong contributions to the growth of China's imports from North Korea, but the degree of contribution was not as stark as China's

exports to North Korea. Lastly, intensive margins continued to play a significant role in the growth of China's imports from North Korea during the period between 1992 and 2012. In particular, the increases in China's imports from Vietnam and Laos were more rapid than those from North Korea which were largely attributable to extensive margin; the increase in China's imports from Myanmar, with a lower growth rate compared to North Korea, was driven by intensive ones.

Overall, North Korea's trade with China, especially its increasing dependence on China, was analyzed as being determined mostly by quantity and price of small number of items rather than the diversification of products. In addition, North Korea's export items that are closely related to quantity and price effects are mostly underground resources. Therefore, they are highly vulnerable to external factors, such as commodity market volatility. In particular, the fact that China-North Korea trade is confined to a small number of items makes attempts by North Korea to pursue growth through trade with China very difficult. **KIEP**