Dependence and competition: trade relationship between Asian countries and China

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ABSTRACT
This study examines two aspects of trade, dependence and competition, between China and Asian countries. The study first outlines China's evolution from a small trading nation that is highly dependent on the Soviet Union to the world's largest trading nation with a diversified trade structure. After being dependent on the Soviet Union during the 1950s, China was dependent on Japan in terms of trade from the 1970s to the 1990s. However, during the first two decades of the 21st century, the relationship between the two countries completely changed. This study further examines bilateral trade relationships of South Korea, Taiwan, Vietnam, Malaysia, Singapore, the Philippines, Indonesia, vis-à-vis China. The study shows that Asian countries have become increasingly dependent on China in terms of trade, at the expense of trade with their conventional partners, namely Japan and the United States. Intra-ASEAN trade is also eclipsed by the growth of trade with China. Additionally, the study reveals, competition in export markets between China and Asian countries has intensified. The high-income countries in Asia have been caught up by China, while the low-income countries are also facing increasing competitive pressure from China.

1. Introduction
Except in 2016, China has been the largest trading nation worldwide since 2013. Among the Asian countries and regions that will be discussed in this study, namely Japan, South Korea, Taiwan, Vietnam, Malaysia, Singapore, Philippines, and Indonesia, China is the most important trade partner. Trade relationships are an important part of these countries' bilateral relations with China and a good reason to motivate them to maintain a sound diplomatic relationship with the country.

However, the relationship between trade relations and diplomatic relations is neither straightforward nor linear. On the one hand, countries will be motivated to stabilize their mutual relationships when they are interested in developing trade. On the other hand, a deep trade relationship does not necessarily yield a sound diplomatic relationship. While their trade relationship with China was growing, Japan, South Korea, Taiwan, Vietnam, and the Philippines severely conflicted with China regarding territorial or security issues.
When diplomatic relations with China deteriorate, a deep trade relationship becomes a weakness that China can use as leverage. For example, when the captain of a Chinese fishing boat operating near the disputed Senkaku/Diaoyu Islands was arrested and detained in Japan in 2010, Chinese customs suspended the export of rare earths and other items to Japan, as if to put pressure on the Japanese government. When the Scarborough Shoal Standoff occurred between the Philippines and China in 2012, China suspended its imports of Philippine bananas and dissuaded their tourists from visiting the Philippines. When South Korea decided to accept the United States’ deployment of terminal high-altitude area defense (THAAD) in its territory in 2017, the Chinese began boycotting Hyundai cars and other Korean products. Furthermore, Chinese tour groups to Korea were canceled. Many Lotte supermarkets in China were also forced to close. These significantly affected the Korean automobile, retail, and cosmetics industries. During the 2014 China-Vietnam oil rig crisis, China temporarily halted credit lines to infrastructure construction contracts in Vietnam and reduced the number of tourists entering Vietnam. A deep trade relationship with an economy as large as China’s often translates into a one-sided dependence. As the above cases show, China has been leveraging such asymmetric relationships to coerce smaller countries to concede on diplomatic disputes. Additionally, trade relationships may yield serious diplomatic conflicts when they involve intense competition between trading partners, as shown by the current US-China trade disputes.

From the above description, we can extract two aspects of trade that may influence diplomatic relations: the degree and nature of a country’s dependence on its partner and the competition between them. The precondition for a trade relationship to have such an impact is that it is economically important for either or both parties. In this study, which examines trade between China and other Asian countries, we can assume that the trade relationship between them has always been important for at least one party. This study quantifies dependence and competition and observes their evolution in the trade relationships of Japan, South Korea, Taiwan, Vietnam, Malaysia, Singapore, the Philippines, and Indonesia with China. The study aims to identify the independent variables that may or may not explain the changes in diplomatic relations, laying the basis for a comprehensive analysis of bilateral relations with China.

The rest of this paper proceeds as follows. Section 2 focuses on trade relations viewed from China’s perspective since the establishment of the People’s Republic. While defining the indices to measure dependence, this section explores how the People’s Republic, which started as a peripheral country heavily dependent on the Soviet Union, evolved as the world’s largest trading nation with a diversified trade structure. Section 3 presents an analysis of trade relations with China viewed from the perspective of Asian countries. The relative importance of China in its trade structure compared to its other major trade partners will be examined visually. The product structure of their trade with China, which is regarded as problematic by some Asian countries, will also be examined. Section 4 further examines the competition over export markets between Asian countries and China and concludes the study.

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1. Marukawa, “Bilateral Trade,” 452–453.
2. Baviera, “Philippines–China Relations,” 3.
3. Hwang, “The Continuous but Rocky,” 3–5.
4. Do, “Vietnam and China,” 12.
2. An overview of China’s trade structure: from dependence to diversification

2.1. Measures of trade and economic dependence

A straightforward way to measure the importance of a partner country (denoted as “C”) for the home country (denoted as “A”) in a trade relationship is to calculate the ratio of the trade value with C ($T_{ac}$) to A’s total trade value ($\Sigma T_{ai}$): $D_{ac} = T_{ac}/(\Sigma T_{ai})$. The ratio of a country’s trade value to its GDP ($\Sigma T_{ai}/GDP_a$) is often used to measure a country’s dependence on trade. The two measures can be combined to gauge the weight of trade with C on A’s economy: $W_{ac} = T_{ac}/GDP_a$. For example, during Japan’s postwar high-growth period from 1956 to 1971, the Japanese economy depended heavily on trade with the United States. $W_{ju}$ – the weight of trade with the United States on Japan’s GDP – was 5.8% and 5.5% during the period from 1956–1964 and 1965–1971\(^5\) respectively. Similarly, we can calculate A’s importance in C’s trade, $D_{ca}$, and the weight of trade with A on C’s economy, $W_{ca}$. By comparing $D_{ac}$ and $D_{ca}$, or $W_{ac}$ and $W_{ca}$, we can ascertain whether the trade relationship between A and C is one-sided dependence, mutual dependence, or non-dependence. During Japan’s high-growth period, the dependence of the US economy on trade with Japan, $W_{uj}$, was 0.5% and 0.9% during the period from 1956–1964 and 1965–1971 respectively, which was very small compared with Japan’s dependence on the US ($W_{ju}$). Back then, the Japan-US trade relationship was obviously a one-sided dependence by Japan.

2.2. China’s dependence on the Soviet Union and Japan

In the early years of the People’s Republic, China heavily depended on trade with the Soviet Union. Having been established in a period when the Cold War between the United States and Soviet Union was intense, it was inevitable for the People’s Republic to adopt a foreign policy of “leaning onto one side” (Yibiandao), which meant a foreign policy establishing and deepening the relationship with the Soviet bloc while remaining antagonistic toward the United States and its allies\(^6\). The deterioration of East-West relations, which culminated in the outbreak of the Korean War in 1950, prompted the formation of a broad embargo by the United States and its allies against the Soviet bloc. China faced the strictest embargo by the Western bloc following its direct involvement in the Korean War\(^7\). China’s trade structure heavily depended on the Soviet Union following the embargo by the Western allies. The share of trade with the Soviet Union in China’s total trade value ($D_{cs}$) increased from 29.8% in 1950 to 54.8% in 1952, while Japan’s share in China’s trade ($D_{cj}$) declined from 5.2% to 0.8% (Table 1).

In 1953, China launched its First Five-Year Plan (1953–57), which was an ambitious industrialization plan that relied on the importation of machinery and technical assistance from the Soviet Union. Imports of plants and machinery from the Soviet Union accounted for more than half of China’s imports from the latter during the period from 1958–1960\(^8\). Although the weight of trade with the Soviet Union on China’s GDP ($W_{cs}$)
was 4.8% in 1955, China’s dependence on economic relations with the Soviet Union was heavier than this figure suggests. This is because besides trade, the Soviet Union supported China’s industrialization by providing preferential loans and dispatching engineers who offered technical assistance. Regarding the Soviet Union, China was one of the most important trade partners, along with the German Democratic Republic and Czechoslovakia during the 1950s, accounting for 18%–21% of its total trade value (D_{sc} in Table 1). Soviet Union’s share in China’s trade (D_{cs}) was more than twice the size of China’s share in Soviet Union’s trade (D_{sc}). However, the relationship was not as asymmetric as in the case of Japan and the US during the 1950s.

The tight economic relationship between China and the Soviet Union suddenly ended in the summer of 1960, when the Soviet Union summoned its expatriate engineers in China to return. Science and technology assistance contracts were canceled, diplomatic relations deteriorated, and bilateral trade dwindled. Soviet’s share in China’s total trade value decreased to only 9.6% in 1965 (see Table 1).

During China’s international isolation, 1960–1971, Japan’s share in China’s trade (D_{cj}) increased from 0.6% in 1960 to 17.9% in 1970 and 18.6% in 1971. China’s isolation was ended by the US President Nixon’s visit to Beijing and the restoration of formal diplomatic relations with Japan in 1972. Since then, China became highly dependent on trade with Japan, with D_{cj} constant exceeding 20% from 1974 to 2000, except the period from 1989 to 1992. With China’s economic opening, which started in the late 1970s, the Chinese economy deepened its reliance on trade; therefore, the weight of trade with Japan on China’s GDP (W_{cj}) increased from 2.4% in 1975 to 4.8% in 1980 and reached a peak of 9.9% in 1993. Conversely, China’s share in Japan’s total trade (D_{jc}) was below 10% until 1998. The weight of trade with China on Japan’s GDP (W_{jc}) was less than 2% until 1999. Table 1 shows that from 1975 to 2000, D_{cj} and W_{cj} – China’s dependence on trade with Japan – were greater than D_{jc} and W_{jc} – Japan’s dependence on trade with China – by 2 to 8 times, indicating a one-sided dependence by China on

### Table 1. Degree of trade dependence between China and Japan, China and the Soviet Union.

| Year | D_{cs} | W_{cs} | D_{sc} | D_{cj} | W_{cj} | D_{jc} | W_{jc} |
|------|--------|--------|--------|--------|--------|--------|--------|
| 1950 | 29.8%  | 1.7%   | 17.7%  | 5.2%   | 0.3%   | 3.3%   | 0.4%   |
| 1952 | 54.8%  | 3.9%   | 18.3%  | 0.8%   | 0.1%   | 0.5%   | 0.1%   |
| 1955 | 56.9%  | 4.8%   | 21.5%  | 3.5%   | 0.3%   | 2.4%   | 0.4%   |
| 1960 | 43.7%  | 2.7%   | 14.9%  | 0.6%   | 0.0%   | 0.3%   | 0.1%   |
| 1965 | 9.6%   | 0.6%   | 2.6%   | 11.1%  | 0.7%   | 2.8%   | 0.5%   |
| 1970 | 1.0%   | 0.1%   | 0.2%   | 17.9%  | 0.9%   | 2.2%   | 0.4%   |
| 1975 | 2.0%   | 0.2%   | 0.4%   | 25.7%  | 2.4%   | 3.3%   | 0.8%   |
| 1980 | 1.3%   | 0.3%   | 0.3%   | 23.9%  | 4.8%   | 3.3%   | 0.9%   |
| 1985 | 2.7%   | 0.6%   | 1.1%   | 31.0%  | 7.0%   | 7.0%   | 1.6%   |
| 1990 | 3.8%   | 1.2%   | 2.3%   | 17.0%  | 5.5%   | 3.8%   | 0.6%   |
| 1995 | 23.2%  | 8.9%   | 8.3%   | 12.2%  | 2.1%   | 18.6%  | 4.6%   |
| 2000 | 20.4%  | 8.1%   | 11.2%  | 14.7%  | 9.3%   | 18.8%  | 4.6%   |
| 2005 | 14.7%  | 9.3%   | 18.8%  | 11.1%  | 5.6%   | 22.5%  | 6.0%   |
| 2010 | 7.7%   | 2.7%   | 24.3%  | 7.7%   | 2.6%   | 23.8%  | 7.1%   |

Source: China’s Trade with the USSR: Lu, “A Brief Analysis”. Slavic Research Center, Soviet Economic Statistical Series. China’s trade: SSB, A Collection, China’s GDP: SSB, Historical Statistics, World Bank Japan’s trade: Okamoto, On Sino-Japanese; MITI, Whitebook on Trade. Japan’s GDP: Cabinet Office, World Bank.
Japan. The bilateral trade relationship between Japan and China at that time was asymmetric.\(^9\)

### 2.3. China’s trade diversification

The asymmetric relationship between Japan and China changed significantly during the first two decades of the 21st century. Japan’s share in China’s total trade value decreased to only 7.7%, while China’s share in Japan’s total trade value increased to 23.8% in 2018. The weight of trade with China on Japan’s GDP in 2018 (\(W_{jw}\)) was 2.7 times greater than that with Japan on China’s GDP (\(W_{cj}\)). China’s one-sided dependence on Japan has changed to Japan’s one-sided dependence on China within less than two decades.

From China’s perspective, the drastic change that occurred in China’s trade structure during the first two decades of the 21st century was a shift from a concentration in Japan to a diversification of trade partners. Zhang and van Witteloostuijn reported that the number of China’s trade partners – countries and regions having more than one million U.S. dollar trade with China – increased from 148 in 1990 to 183 in 1999. Further, the Herfindahl-Hirshman concentration index of Chinese exports decreased from 0.47 in 1990 to 0.34 in 1999.\(^10\) According to the author’s calculation, using UNCTAD trade data, the number of China’s trade partners further increased from 187 in 2000 to 208 in 2017; the Herfindahl-Hirshman index further decreased to 0.26 in 2017. China’s trade developed most rapidly in several remote countries in Africa, Latin America, Oceania, and Central Asia. The Chinese government pushed forward its trade diversification strategy through several initiatives such as the “Belt and Road Initiative” launched in 2013, the China Africa Development Fund (CAD Fund) founded in 2007, and the “Sixteen-plus-one” or “Seventeen-plus-one” cooperation with Central and Eastern European countries (China-CEE) founded in 2012.

The dynamics of trade concentration to diversification can be examined by observing the changes in the trade intensity indices. The trade intensity index measures the relative closeness of the two countries in trade.\(^11\) It is defined as

\[
exTI_{cf} = \frac{x_{cf}/m_f}{x_c/(m_w - m_c)}
\]

\[
imTI_{cf} = \frac{m_{cf}/x_f}{m_c/(x_w - x_c)}
\]

where the export intensity index (\(exTI_{cf}\)) is country \(c\)’s export intensity index with country \(f\), in which \(x_{cf}\) is \(c\)’s exports to \(f\), \(m_f\) is \(f\)’s total imports, \(x_c\) is \(c\)’s total exports, \(m_w\) is the world’s total imports and \(m_c\) is \(c\)’s total imports. It measures the degree of distortion from a hypothetical world without trade impediments that influence the geographical distribution of trade. In such a world, country \(c\)’s total exports will be allocated to \(f\) in proportion to \(f\)’s share of world imports. In other words, \(f\)’s share in \(c\)’s exports

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\(^9\)Platte, “Japan–China Trade,” 114.

\(^10\)Zhang and van Witteloostuijn, “Economic Openness,” 260–1. The Herfindahl-Hirshman index is calculated as, where \(n\) denotes the number of trade partners, and \(\sigma\) denotes the share of exports of a specific country in total exports.

\(^11\)Kojima, World Economy; Kunimoto, “Typology of Trade Intensity”.
will be the same as f’s share in the world’s imports (excluding c’s imports, because c cannot import from itself), or \( x_{cf}/x_c = m_f/(m_w-m_c) \). The exTI in this hypothetical world shows unity. If exTI\(_{cf}\) exceeds unity, c exports more intensely to f than the rest of the world. imTI\(_{cf}\) is the country’s import intensity index with country f, in which m\(_{cf}\) is c’s imports from f, x\(_f\) is f’s total exports, m\(_w\) is c’s total imports, x\(_w\) is the world’s exports, and x\(_c\) is c’s total exports. If imTI\(_{cf}\) exceeds unity, c imports more intensely from f than the rest of the world.

In the real world, where transportation costs exist, countries are likely to trade more intensely with geographically close countries. This idea was formulated as the gravity model, which explains bilateral trade volume by the size of the two countries’ GDP and their mutual geographical distance. Zhang and van Witteloostuijn, who analyzed China’s trade data of 1993 and 1999, reported that geographical distance has significantly negative impacts on both the export and import intensity indices of China. This confirms the effectiveness of the gravity model in explaining China’s trade pattern.

However, in recent years, the explanatory power of geographical distance has weakened. As shown in Table 2, China’s exTIs with Japan and Hong Kong – the most important markets for China’s exports during the 1980s and the 1990s – have decreased significantly, while exTIs with Sub-Saharan Africa, Latin America, and the Caribbean, and Oceania increased. Almost the same pattern was observed for the changes in imTIs. imTIs in close countries decreased, and those in remote countries increased.

Here, I quickly check whether the explanatory power of geographical distance on China’s trade intensity has indeed weakened by estimating a reduced version of the empirical model estimated by Zhang and van Witteloostuijn, which is:

### Table 2. China’s trade intensity indices.

| Region                        | Export intensity | Import intensity |
|-------------------------------|------------------|------------------|
|                              | 1999*            | 1999            | 2017*            | 1999            | 2017            |
| EU                            | 0.44             | 0.41            | 0.46             | 0.42            | 0.38            | 0.35            |
| US                            | 1.19             | 1.15            | 1.27             | 0.96            | 0.96            | 0.84            |
| Japan                         | 3.10             | 3.04            | 1.45             | 2.74            | 2.75            | 1.99            |
| Hong Kong                     | 6.10             | 5.92            | 3.36             | 1.35            | 1.34            | 0.11            |
| Africa                        | 0.90             |                 | 0.75             |                 |                 |                 |
| Sub-Saharan Africa            | 0.62             | 1.63            |                 | 0.55            | 1.99            |                 |
| Latin America and the Caribbean | 0.46         | 0.92            |                 | 0.34            | 1.07            |                 |
| Oceania                       | 1.04             | 1.29            |                 | 1.96            | 3.20            |                 |
| South Korea                   | 1.89             | 1.52            |                 | 4.07            | 2.59            |                 |
| Taiwan                        | 1.03             | 1.20            |                 | 5.55            | 4.11            |                 |
| Viet Nam                      | 2.38             | 2.38            |                 | 1.04            | 1.96            |                 |
| Malaysia                      | 0.75             | 1.52            |                 | 1.45            | 2.09            |                 |
| Singapore                     | 1.18             | 0.97            |                 | 1.20            | 0.77            |                 |
| Thailand                      | 0.83             | 1.23            |                 | 1.62            | 1.48            |                 |
| Philippines                   | 1.23             | 2.23            |                 | 0.88            | 2.34            |                 |
| Indonesia                     | 1.55             | 1.57            |                 | 2.13            | 1.42            |                 |

Source: Figures in the 1999* column are from Zhang and van Witteloostuijn. “Economic Openness.” The others are the author’s calculation based on the data from UNCTAD.

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12 Kunimoto, “Typology of Trade Intensity,” 16–18.
13 Isard, “Location Theory”; Tinbergen, Shaping the World Economy.
14 Zhang and van Witteloostuijn, “Economic Openness.”
Table 3. The impact of geographical distance on China’s trade intensity.

| Year | exTI Coefficient | t-value | imTI Coefficient | t-value |
|------|------------------|---------|------------------|---------|
| 1999 | −0.45            | −5.37   | 0.80             | −5.41   |
| 2010 | −0.28            | −3.54   | 0.45             | −3.64   |
| 2017 | −0.28            | −3.99   | 0.46             | −3.85   |

Source: The author’s calculation

\[ \ln TI = \beta_0 + \beta_1 \text{DIST} + \epsilon \]

Here, TI indicates the trade intensity index, and DIST is a categorical variable that indicates the geographical distance between China and its trade partners. Countries bordering China are coded as 0, other Asian countries as 1, Oceanian countries as 2, European and African countries as 3, and countries in the Americas as 4.

The absolute values of the estimated coefficients for 1999 in my calculation are greater than those estimated by Zhang and van Witteloostuijn, mainly because I omit eight other explanatory variables they use in their analysis. The decrease in the absolute values of the coefficients from 1999 to 2010 and 2017 (Table 3) suggests that the effect of geographical distance in explaining both export and import intensities has weakened. The highest number of exTIs in China in 2017 included Djibouti (20.1), Liberia (13.7), and Togo (7.2). Notably, China exports more intensely to these remote countries than to Hong Kong. The highest cases among China’s imTIs in 2017 included Solomon Islands (9.29), Gambia (7.83), Turkmenistan (7.38), Mongolia (6.97), Congo (5.45), and Angola (5.02). China imports more intensely from these countries than from Taiwan. These are primary goods exporters that are highly dependent on the exports to China. The increase in China’s exTIs with remote regions such as Sub-Saharan Africa can be explained by the rise of the global competitiveness of Chinese manufactured goods, such as smartphones and other telecommunication equipment, which accounted for 9% of China’s total exports in 2020. The increase in China’s imTIs with remote regions reflect the increase of China’s demand for primary goods, such as iron and copper ores, soybeans, wood, crude oil and natural gas. In short, China is trading along with its comparative advantage in manufactured goods and disadvantage in certain primary goods more and more in a global scale.

The analyses in this section show that, while being heavily dependent on the Soviet Union and Japan in trade during the first four decades of the People’s Republic, China has created a diversified trade structure in the 21st century. Several remote countries have become highly dependent on the imports from or exports to China.

\[\text{Marukawa, “The Economic Nexus,” 30–31.}\]
3. Asian countries’ trade with China

3.1. Trade and economic dependence

While China has been strengthening its ties with remote countries in Africa and Latin America, Asian countries have increased their trade and economic dependence on China. This section analyzes bilateral trade relationships with China from the perspectives of Japan, South Korea, Taiwan, Vietnam, Malaysia, Singapore, the Philippines, and Indonesia.

Table 4 summarizes the trade and economic dependence indices of these countries and the region’s trade dependence on China. (Japan’s indices are reported in Table 1). In 2018, China’s share in total trade value ($D_{ic}$) surpassed 20% in South Korea, Taiwan, Indonesia, and Vietnam. In all the cases listed in Table 4, China’s share increased more than double the original share between 2000 and 2018. In Taiwan, Vietnam, Malaysia, and Singapore, the weight of trade with China on the country’s GDP ($W_{ic}$) is above 20%.

By comparing the $D_{ic}$ in Table 4 (China’s share in each country’s trade) and Table 5 (Asian countries and region’s share in China’s trade), we find that the trade relationship has changed from symmetric to asymmetric. In 2000, South Korea and Taiwan’s share in China’s total trade value of 7.3% and 6.4%, respectively, were not very different from China’s share in their total trade value of 9% and 4%, respectively. In 2018, China’s share in its total trade value was 3 to 7 times greater than its share in China’s total trade.

While the degree of trade dependence between China and Asian countries has become asymmetric, there are also concerns about the asymmetry in the product structure of trade in some Asian countries. It is argued that the trade relationship of Vietnam with

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**Table 4. Asian countries and region’s trade and economic dependence on China.**

| Year | South Korea | Taiwan | Philippines | Indonesia | Vietnam | Thailand | Malaysia | Singapore |
|------|-------------|--------|-------------|-----------|---------|----------|----------|-----------|
| 1995 | 6%          | 3%     | 2%          | 1%        | 4%      | 2%       | 3%       | 4%        |
| 2000 | 9%          | 5%     | 3%          | 2%        | 6%      | 4%       | 5%       | 3%        |
| 2005 | 18%         | 11%    | 16%         | 16%       | 8%      | 7%       | 9%       | 5%        |
| 2010 | 21%         | 16%    | 21%         | 25%       | 10%     | 5%       | 12%      | 5%        |
| 2015 | 24%         | 16%    | 23%         | 22%       | 14%     | 6%       | 16%      | 5%        |
| 2018 | 24%         | 16%    | 24%         | 24%       | 17%     | 9%       | 20%      | 7%        |

China has been the country’s largest trade partner since:

- 2004
- 2005
- 2006
- 2012
- 2004
- 2013
- 2009
- 2009

**Source:** The author’s calculation based on the data from UNCTAD.

**Table 5. The shares of Asian countries and region in China’s total trade value.**

| Year | South Korea | Taiwan | Philippines | Indonesia | Vietnam | Thailand | Malaysia | Singapore |
|------|-------------|--------|-------------|-----------|---------|----------|----------|-----------|
| 1995 | 6.2%        | 6.5%   | 0.5%        | 1.3%      | 0.4%    | 1.2%     | 1.2%     | 2.5%      |
| 2000 | 7.3%        | 6.4%   | 0.7%        | 1.6%      | 0.5%    | 1.4%     | 1.7%     | 2.3%      |
| 2005 | 7.9%        | 6.4%   | 1.2%        | 1.2%      | 0.6%    | 1.5%     | 2.2%     | 2.3%      |
| 2010 | 7.0%        | 4.9%   | 0.9%        | 1.4%      | 1.0%    | 1.8%     | 2.5%     | 1.9%      |
| 2015 | 7.0%        | 4.8%   | 1.2%        | 1.4%      | 2.4%    | 1.9%     | 2.5%     | 2.0%      |
| 2018 | 7.1%        | 5.3%   | 1.2%        | 1.7%      | 3.3%    | 2.0%     | 2.5%     | 1.9%      |

**Source:** The author’s calculation based on the data from UNCTAD.
China, in which the country exports mostly raw materials while importing mostly manufactured goods, is harmful to the country’s economy\textsuperscript{16} An asymmetric product structure is found in the case of Indonesia-China trade relationship too, in which 78% of Indonesia’s exports to China consisted of raw materials, mineral fuel, and vegetable oil, while 89% of Indonesia’s imports from China were manufactured goods in 2010\textsuperscript{17}

However, after 2010, the asymmetry in the product structure of trade except that of the Indonesian–China trade relationship was significantly reduced. According to China’s import statistics, primary goods (SITC 0–4) accounted for more than 80% of imports from Vietnam until 2005. However, these accounted for only 7% in 2018 (Table 6). This change was the result of Vietnam’s rise as an important production base for smartphones and other electronic manufactures, which was made possible by foreign direct investment from Korea and Japan\textsuperscript{18} The trade relationship between China and Vietnam has changed from an international division of labor in which Vietnam focuses on primary goods to an intra-industry trade. In 2020, electrical machinery and parts accounted for 62% of China’s imports from and 36% of China’s exports to Vietnam.

In 2018, compared with the situation in 1995, the share of primary goods decreased in imports from other Asian countries, except Indonesia. The development of the international division of labor in manufacturing between China and other Asian countries has caused a relative decline in the trade of primary goods.

### 3.2. Trade intensification with China vis-à-vis other major partners

The increase in China’s share in Asian countries’ trade implies a relative decrease in trade with other partners. It will be intriguing to ascertain the countries or regions that lost their shares vis-à-vis China. This section shows the changes in the relative importance of major trade partners graphically using triangular graphs. The triangular graphs show the changes in the relative importance of three major trade partners for an Asian country, measured by their shares in the country’s total imports and exports. The three partners include China and two other countries between Japan, the United States, and ASEAN. Two of these three partners were selected based on their average trade shares in 1995 and 2018.

Figure 2-A shows the changes in the shares of China, ASEAN, and the United States in Japan’s total imports and exports. China’s share in Japan’s trade is measured using a horizontal scale and sloped adjacent lines. A movement toward the lower left apex of

### Table 6. The share of primary goods (SITC 0–4) in China’s total imports.

| Year | Japan | South Korea | Taiwan | Philippines | Indonesia | Vietnam | Thailand | Malaysia | Singapore |
|------|-------|-------------|--------|-------------|-----------|---------|----------|----------|-----------|
| 1995 | 3%    | 9%          | 4%     | 72%         | 55%       | 96%     | 65%      | 56%      | 39%       |
| 2000 | 3%    | 12%         | 3%     | 11%         | 55%       | 93%     | 29%      | 24%      | 18%       |
| 2005 | 4%    | 6%          | 2%     | 3%          | 53%       | 80%     | 20%      | 14%      | 14%       |
| 2010 | 4%    | 7%          | 1%     | 11%         | 75%       | 47%     | 20%      | 23%      | 20%       |
| 2015 | 4%    | 5%          | 1%     | 19%         | 68%       | 14%     | 24%      | 20%      | 13%       |
| 2018 | 4%    | 5%          | 1%     | 16%         | 64%       | 7%      | 22%      | 24%      | 13%       |

Source: The author’s calculation based on the data from UN Comtrade.

\textsuperscript{16}See note 4 above, 9.
\textsuperscript{17}Sato, Indonesia, 119–120.
\textsuperscript{18}Ikebe, “East Asian”.
the dots indicates an increase in China’s share in the total of the three trade partners. The dots representing Japan’s imports and exports moved horizontally from right to left, indicating that China’s share increased by eroding the United States’ share, while ASEAN’s share remained almost constant.

Regarding South Korea (Figure 2-B), the dots moved from the upper right side to the lower left apex, indicating that China has eroded both Japan’s and the US’s shares in the Korean trade. In Korea’s imports, the US’s share was eroded by China until 2008; from 2009 onward, Japan’s share was eroded. Regarding Taiwan (Figure 2-C), exports to Mainland China were miniscule in 1995. However, it was likely that a considerable amount of exports to the Mainland was made via Hong Kong. In 1995, Taiwan had a tight trade relationship with the United States and Japan. Over the years, China has drastically eroded the US’s share in Taiwan’s exports; the erosion of Japan’s share was
moderate. Taiwan’s imports followed a trajectory similar to that of Korea. China eroded the US’s share until 2005, and from 2006 onward, Japan’s share was eroded. Regarding Vietnam (Figure 2-D), China eroded the shares of ASEAN and Japan in the country’s exports and imports. (Trade data before 1998 were omitted because of lack of adequate data). The shift from ASEAN to China was notable, while that from Japan was moderate.

Thailand and Malaysia (Figures 2-E, 2-F) followed a similar trajectory during this period. In 1995, Japan’s shares in both countries’ imports were extremely high – 31% in Thailand and 27% in Malaysia. During the latter half of the 1990s, ASEAN eroded Japan’s share in its imports. Since around 2000, ASEAN’s share in their imports has remained at the same level, while China has eroded Japan’s share. Both countries have been highly connected with ASEAN in their exports throughout the period, while China gradually eroded Japan’s share.

The Philippines had a close trade relationship with the United States in 1995 (Figure 2-G). Until 2010, ASEAN eroded the US’s share in the Philippines’ trade. In 2011, China started to erode both ASEAN’s and the US’s shares in the Philippines’ trade. Singapore has been highly connected with ASEAN in its exports throughout the period, while China gradually eroded the US’s share (Figure 2-H). In Singapore’s imports, since 2010, China has gradually eroded not only the US but also the ASEAN’s share. Regarding Indonesia’s imports (Figure 2-I), the shift of shares until 2006 was from Japan to ASEAN. From 2007 onward, China eroded ASEAN’s share, while Japan’s share remained at the same level. Regarding Indonesia’s exports, it was mainly ASEAN that had eroded Japan’s share, until 2015. From 2016, however, China started to erode both ASEAN’s and Japan’s shares.

Regarding all the nine economies, China eroded Japan and/or the United States shares in trade during the period under consideration. This is not surprising considering the relative rise of China’s GDP and trade volume vis-à-vis Japan and the United States. However, the growth of trade with China has started to eclipse intra-ASEAN trade. This is troubling ASEAN. ASEAN’s share rose relative to other major trade partners during the latter half of the 1990s and the early 2000s in ASEAN countries’ trade, hence reflecting the development of their economy and trade liberalization under the AFTA (ASEAN Free Trade Area) agreement which was signed in 1992 and proceeded gradually from 1993 to 2008. However, China started to erode ASEAN’s share during the 2000s or later in the cases of Vietnam, the Philippines, Singapore, and Indonesia. The progress in trade liberalization under the ACFTA (ASEAN-China Free Trade Area) agreement – which was signed in 2002 – may partially be responsible for this. China’s rise has begun to affect ASEAN’s economic integration.

4. Competition with China

JaeHo Hwang points out that with the narrowing of the technological gap and the similarities in industrial and export structures between Korea and China, there are rising concerns in Korea over the competition with China in the global market. China is the largest exporter in the world. It is therefore likely that many countries have faced similar

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19 Hwang, “The Continuous but Rocky,” 4.
competitive pressure from China in various industries. This section compares the degree of exposure to China’s competition in Asian countries.

Korea’s concerns are justified by the fact that China is increasingly becoming an important exporter of technologically sophisticated goods, which were exported mainly by developed countries in the past. This fact was confirmed by Kumagai and Kuroiwa’s analysis, which estimated the “income level” of the export basket of six Asian countries. They first calculate the “income level” for each export item, which is the weighted average of per-capita GDPs of the countries exporting the item, which is further called “PRODY.” A high PRODY means that the item is exported mainly by rich countries. They further calculate the export-weighted average of the PRODYS of a country’s export basket, which is named “EXPY.” EXPY is a measure of the “income level” of a country’s export structure. China’s EXPY in 2000 was approximately 20,000 in purchasing power parity (PPP)-adjusted 2011 US dollars, which was at approximately the same level as Thailand. In that year, the EXPYs of Japan, South Korea, and Malaysia were 27,000, 24,000, and 23,000, respectively. China’s EXPY surpassed that of Malaysia in 2007; in 2015, the EXPYs of Japan, South Korea, and China were 27,000, 26,000, and 24,000, respectively. The gap between the EXPYs of South Korea and China narrowed from 4,000 to 2,000.

The narrowing of EXPY, however, does not necessarily mean that the two countries are competing in the same industry. Some countries with high EXPYs may be competitive in sophisticated steel products, while others with equivalent EXPYs may be competitive in IC chips. To measure the severity of competition in export products, we must consider how much of the export product mixes of the two countries overlap.

In the following, the “overlaps” are measured using two methods. First, the shares of each export item in an Asian country and China’s total export values are compared. If a certain item (IC chip, for example) accounts for 20% of an Asian country’s total exports and 5% of China’s total exports, then we regard that 5% of the Asian country’s exports overlap with China. The overlaps are aggregated for all the export items, which generate the “overlaps in export shares” reported in the upper part of Table 7.

| Table 7. Ratio of overlaps with China in the trade structure. |
|---------------------------------------------------------------|
| **Overlaps in Export Shares**                                 |
|                                                              |
| **Japan** | **South Korea** | **Taiwan** | **Philippines** | **Indonesia** | **Vietnam** | **Thailand** | **Malaysia** | **Singapore** |
| 2000      | 25%            | 27%        | 31%           | 25%           | 33%         | 25%         | 35%         | 27%          | 25%         |
| HS85     | 11%            | 10%        | 10%           | 7%            | 9%          | 3%          | 12%         | 13%          | 12%         |
| 2018     | 29%            | 32%        | 31%           | 31%           | 20%         | 41%         | 35%         | 28%          | 24%         |
| HS85     | 11%            | 12%        | 11%           | 12%           | 4%          | 20%         | 12%         | 13%          | 11%         |
| **Overlaps in Export Value**                                  |
|                                                              |
| 2000      | 17%            | 37%        | 46%           | 56%           | 52%         | 68%         | 64%         | 50%          | 39%         |
| 2018     | 54%            | 69%        | 79%           | 83%           | 41%         | 79%         | 68%         | 67%          | 65%         |

* Data on “other Asia, nes” in UN Comtrade is regarded as Taiwan’s trade data. Trade values reported in the Republic of China’s National Statistics website are almost the same with “other Asia, nes” in UN Comtrade. The difference is in the range of 1 to 3%.

**Source:** Calculated by the author based on the data from UN Comtrade.

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20Kumagai and Kuroiwa, “Export Upgrading,” 2–34.
21Hausmann, Hwang and Rodrik, “What You Export,” 9–10.
Export items are classified by 4-digit level classification codes of the harmonized system (HS). With the 4-digit level classification, exports of China and Asian countries are classified into more than 1200 items. The items that account for less than 0.1% of China’s exports or less than 0.1% of the Asian country’s exports are omitted from the aggregation because they are not likely to represent the export competitiveness of China and the Asian country.

The second method used to measure overlaps is directly comparing the export values of each item. If the export value of IC chips by China is 2 USD billion and that of an Asian country is 500 USD million, then we conclude that 500 USD million of the Asian country’s exports overlap with China. The overlaps are aggregated and compared with the total export value of the Asian country. The classification of export items is the same as in the first method; the items that account for less than 0.1% of the Asian country’s exports are omitted from the aggregation. The results (“Overlaps in export value”) are reported in the lower part of Table 7. The overlaps in export shares (OS_{ic}) and the overlaps in export value (OV_{ic}) between an Asian country and China can be formalized mathematically as

\[\text{OS}_{ic} = \sum_{t=1}^{T} \min\left\{ E_{it}/E_i, E_{ct}/E_c \right\}, \left\{ E_{it}, E_{ct} \mid \frac{E_{it}}{E_i} \geq 0.001, \frac{E_{ct}}{E_c} \geq 0.001 \right\}\]

\[\text{OV}_{ic} = \sum_{t=1}^{T} \min\{E_{it}, E_{ct}\}/E_i, \left\{ E_{it} \mid \frac{E_{it}}{E_i} \geq 0.001 \right\}.\]

where \(E_{it}\) is the export value of country i’s item t, and \(E_i\) is i’s total exports.

Comparing the OS_{ic} of 2000 and 2018, we find that competition with China intensified in the cases of Japan, South Korea, the Philippines, and Vietnam, but weakened in the case of Indonesia. South Korea is facing China’s competition in a broader range of products in 2018 than in 2000. However, the change seems modest. Interestingly, Vietnam’s overlap in export shares with China was the largest in 2018. This change can be attributed to Vietnam’s development as a major exporter of electronic goods. Overlaps that took place in the electrical machinery (HS85) are listed in Table 7. Evidently, the 16%-point rise in Vietnam’s overlap and the 6%-point rise in the Philippines’ overlap with China are explained by the increase in overlaps in electrical machinery exports.

Overlaps in export value (OV_{ic}) account for the volume of trade. China’s total export value was 37 times and 10 times greater than that of the Philippines and Vietnam respectively. Therefore, even an export item that accounts for a small percentage of China’s exports may be large for Asian countries. OV_{ic} is likely to represent the real competitive pressure from China felt by Asian countries. The overlap is the largest in the Philippines, Taiwan, and Vietnam, followed by South Korea, Thailand, and Malaysia. In all the countries except Indonesia, overlaps increased. OV_{ic} increased by more than 30% in the cases of Japan, South Korea, and Taiwan, hence suggesting China’s rapid catch-up.

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22In most cases, the 4-digit level classification fits with the common perception on what constitutes “an industry.” The 2-digit level classification such as HS87, which includes cars, trucks, tractors, and parts thereof, seems too broad to be regarded as a single industry, because the manufacturers of these items are not necessarily competing. The 6-digit level classification such as HS870322 (passenger cars with 1000–1500cc gasoline engines) seems too narrow because the manufacturers of such item are likely to be competing with those of other categories. The 4-digit level classification (HS8703, passenger cars) is the closest to the general perception on the arena of competition.
in the exports of goods with high PRODYs. This fact may explain why Koreans are deeply concerned about the rise in China’s export competitiveness. However, Table 7 shows that the countries with higher per capita GDP than China as well as those with lower per capita GDP have increasingly faced China’s competition.

5. Conclusion

Trade relations are an important part of international relations; they significantly impact diplomatic relations. To lay the basis for comprehensive studies on the Asian countries’ bilateral relationships with China, this study measured two aspects of trade relationships: dependence and competition. During the latter half of the 20th century, China was a small trading nation that depended heavily on trade with the Soviet Union first and then with Japan. However, during the first two decades of the 21st century, China’s trade relationship with Japan changed significantly. Japan’s position vis-à-vis China has radically changed from being dependent to being dependent. Similarly, South Korea, Taiwan, Vietnam, Malaysia, Singapore, the Philippines, and Indonesia became dependent on China. Trade with China gained importance in their trade relationships in comparison to their conventional trade partners – Japan and the United States. Intra-ASEAN trade is also eclipsed by the growth of trade with China. Additionally, competition in export markets with China has intensified. The high-income countries in Asia have been caught up by China. However, low-income countries in Asia, except Indonesia, are also facing increasing competitive pressure from China.

Disclosure of potential conflicts of interest

No potential conflict of interest was reported by the author(s).

Funding

This work was supported by the Japan Society for the Promotion of Science [16H02004].

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