

STRATEGIC ASIA

RESHAPING ECONOMIC INTERDEPENDENCE

in the Indo-Pacific

Edited by

Ashley J. Tellis, Alison Szalwinski, and Michael Wills

South Korea

**South Korea's Economic Statecraft: Between
Interdependence and National Security**

Yul Sohn and Hyo-young Lee

RESTRICTIONS ON USE: This PDF is provided for the use of authorized recipients only. For specific terms of use, please contact <publications@nbr.org>. To purchase *Reshaping Economic Interdependence in the Indo-Pacific*, please visit <<http://www.nbr.org>>.

© 2023 The National Bureau of Asian Research



THE NATIONAL BUREAU of ASIAN RESEARCH
Seattle and Washington, D.C.

EXECUTIVE SUMMARY

This chapter examines how weaponized interdependence and pressures to decouple have affected South Korea's foreign policy.

MAIN ARGUMENT

Given its asymmetric economic interdependence with China, on the one hand, and Washington's demand for decoupling from Beijing, on the other, South Korea faces three key challenges: ensuring supply chain resilience, reducing heavy reliance on China for critical materials, and sustaining an adequate level of economic interdependence under decoupling pressure. Two areas where these challenges will be especially acute are the semiconductor industry and the supply chain for critical raw materials. In both cases, the South Korean government's policies have focused on reducing the vulnerabilities entailed by economic interdependence and finding ways to navigate great-power rivalry. More broadly, South Korea's search for strategic autonomy and economic prosperity requires a proactive and holistic approach that includes both individual and collective efforts for managing economic interdependence responsibly.

POLICY IMPLICATIONS

- While South Korea is concerned with reducing vulnerabilities arising from its interdependence with China, its economic statecraft is more preoccupied with U.S. pressures to decouple.
- South Korea seeks to define the scope of technologies sensitive to national security. There is a need for multilateral forums that set norms and rules that strike a balance between national security and economic interdependence.
- South Korea needs internationally coordinated strategies that constantly monitor risks to its supply chains, discourage the abuse of economic interdependence, and establish a new regional architecture that renovates value chains, resists overt protectionism, and promotes inclusive and resilient globalization.

South Korea's Economic Statecraft: Between Interdependence and National Security

Yul Sohn and Hyo-young Lee

The Republic of Korea (ROK, or South Korea) has immensely benefited from the expanded cross-border networks of economic interdependence that have developed under an open multilateral trading system. The country has also thrived through a web of free trade agreements (FTAs) cultivated with a number of important economies, including the Association of Southeast Asian Nations (ASEAN), the United States, the European Union, China, Canada, and India. Fundamentally, its export-oriented growth strategies elevated South Korea to the status of a major economic power with highly sophisticated and technologically advanced markets.

During the past decade, however, South Korea has faced unprecedented challenges at a time when it has sought deeper trading relationships with its two major partners: the United States as a critical security ally and China as its largest export market. The United States shifted its status from a champion of globalization to a principal source of deglobalization as the Trump administration withdrew from the Trans-Pacific Partnership (TPP) agreement and applied various protectionist measures under the banner of “America first.” Meanwhile, China ostensibly upholds the values of globalization, but it

Yul Sohn is a Professor in the Graduate School of International Studies and the Underwood International College at Yonsei University and President of the East Asia Institute in Seoul. He can be reached at <yulsohn@yonsei.ac.kr>.

Hyo-young Lee is an Associate Professor at the Korea National Diplomatic Academy. She can be reached at <hylee17@mofa.go.kr>.

sustains state capitalism with a wide range of unfair economic practices that impose numerous barriers to market access.¹

Another challenge has come from weaponized interdependence, whereby one state exploits its position in an interdependent network to coerce vulnerable partners.² Given its deep yet asymmetrical economic interdependence with China, South Korea is more vulnerable to the costs associated with weakening or severing economic ties and thus more likely to consider strategic concessions to China. The dynamics of weaponized interdependence compel South Korea to either sacrifice its economic benefits in favor of strategic interests or vice versa. The same is true in the case of U.S.-ROK relations, especially when U.S.-China strategic competition intensifies and spills over to affect trade and technology policy. As heated strategic competition between the two great powers leads toward selective decoupling in strategic sectors, South Korea is left with a considerable strategic dilemma. There is pressure from Washington to align with U.S.-led decoupling efforts, while at the same time Beijing warns that the already fraught relationship between China and South Korea will only further deteriorate if Seoul insists on leaning toward the United States.³

In this regard, South Korea's economic statecraft needs to focus on reducing vulnerabilities brought on by asymmetric economic interdependence. It also needs to find ways to navigate the great-power rivalry and alleviate U.S. pressures to decouple from China. If the recent shift in language from "decoupling" to "de-risking" reflects Washington's attempt to take a more moderate and realistic stance for its European and Asian allies concerned about severing economic ties with China,⁴ it is likely that South Korea will find room for maneuvering with a practical approach to strike a

¹ Elizabeth C. Economy, *The World According to China* (Cambridge: Polity, 2021).

² Daniel W. Drezner, "Introduction: The Uses and Abuses of Weaponized Interdependence," in *The Uses and Abuses of Weaponized Interdependence*, ed. Daniel W. Drezner, Henry Farrell, and Abraham L. Newman (Washington, D.C.: Brookings Institution Press, 2021), 1.

³ Zhang Huizhi, "South Korean Economy under Thickening Cloud," *Global Times*, May 11, 2023, <https://www.globaltimes.cn/page/202305/1290566.shtml>.

⁴ "Joint Statement by President Biden and President von der Leyen," White House, Press Release, March 10, 2023, <https://www.whitehouse.gov/briefing-room/statements-releases/2023/03/10/joint-statement-by-president-biden-and-president-von-der-leyen-2>; Janet L. Yellen, "Remarks by Secretary of the Treasury Janet L. Yellen on the U.S.-China Economic Relationship at Johns Hopkins School of Advanced International Studies," U.S. Secretary of the Treasury, April 20, 2023, <https://home.treasury.gov/news/press-releases/jy1425>; Jake Sullivan, "Remarks by National Security Advisor Jake Sullivan on Renewing American Economic Leadership at the Brookings Institution," U.S. National Security Adviser, April 27, 2023, <https://www.whitehouse.gov/briefing-room/speeches-remarks/2023/04/27/remarks-by-national-security-advisor-jake-sullivan-on-renewing-american-economic-leadership-at-the-brookings-institution>; and "G-7 Hiroshima Leaders' Communiqué," White House, Press Release, May 20, 2023, <https://www.whitehouse.gov/briefing-room/statements-releases/2023/05/20/g7-hiroshima-leaders-communicue>.

proper balance between economic interdependence and national security, thus accommodating China while increasing U.S. engagement.

This chapter is divided into five main sections. The first section overviews South Korea's trade patterns and their changes vis-à-vis China, with a focus on changes in global value chains. The next section highlights the structural vulnerabilities that affect South Korea's foreign policy and presents key challenges and tasks for its economic statecraft. In the following two sections, South Korea's strategic approach to economic interdependence is presented through an examination of the supply chains for semiconductors and critical minerals. This chapter concludes by suggesting that South Korea pursue a collective and multilateral approach to establish norms and rules defining the scope of technologies sensitive to national security and to restore an international economic order that ensures inclusive and resilient globalization.

Changing Trends in South Korea's Foreign Trade

South Korea is a highly trade-dependent country, with trade accounting for more than 70% of its GDP and a continuous trade surplus since the late 1990s. The country's trade growth rates have surpassed those of the rest of the world since the 1960s, and its share of world trade has accounted for more than 2% since 1990. Since 2010, South Korea has ranked ninth in world trade volumes.⁵ Its major exports are semiconductors, automobiles, telecommunications equipment, computers, ships, and petroleum products. These industries are supported by an industrial base that began to be established in the 1980s through the strategic alignment of government resources and assets and the expansion of private sector R&D investment. Until the late 1990s, the United States and Japan accounted for almost 70% of South Korea's total trade, but more diverse trade relationships with Europe and other Asian markets have since been established.⁶

China, however, became South Korea's top export destination in 2004, accounting for nearly 22% of its total exports. Following the establishment of bilateral trade and investment agreements in 1992, exports to China increased rapidly, especially in equipment and intermediate goods, as South Korean companies expanded their direct investment in China.⁷ Furthermore, the complementary industrial structures and natural resources in both countries, with South Korea's stage of economic development preceding that of China

⁵ Ministry of Trade, Industry and Energy (ROK), *2019–2020 Saneup Tongsang Jawon Baekseo* [2019–2020 Trade, Industry, and Energy White Paper] (Seoul, 2020).

⁶ Korea International Trade Association (KITA), “Hanguk muyeoksa” [History of Korean Trade], 2006.

⁷ Ibid.

at a sufficient level to enable technology transfer, contributed to expanding bilateral trade. Most of the bilateral trade took the form of processing trade. Direct investments by South Korean companies into labor-intensive sectors in China led to increased exports of South Korean components and intermediate capital goods to these sectors, which in turn led to increased bilateral trade through re-export to South Korea or other foreign markets.

South Korea's Trade Patterns in 2021–22

Despite the dire conditions caused by the prolonged effects of Covid-19, China's economic slowdown, escalating U.S.-China tensions, and the Russia-Ukraine war, South Korea has seen continuous growth in foreign trade, recording increases in both export and import volumes in 2021–22.

In 2021, South Korea's exports and imports grew by 24.1% and 29.5%, respectively, during the global economic recovery from the Covid-19 pandemic. Exports were mainly led by growth in major items, such as semiconductors, petrochemicals, steel, automobiles, and car components. The country's foreign trade volumes rose faster than in most other major trading countries, recording a 27.9% trade growth rate, which trailed only China (34.2%) and Italy (32.5%). South Korea's exports of semiconductors, which used to be the main contributor to growth, have declined in recent years. The proportion of semiconductor exports to total growth in exports peaked in 2018 (92.3%) but sharply dropped in 2019 (52.3%) and 2020 (17.6%), before recovering only slightly in 2021 (20.2%).⁸ In fact, by 2021, South Korea's growth in exports had been driven by a more diversified portfolio of export products, such as semiconductors (20.2%), petrochemicals (15.2%), petroleum products (9.3%), automobiles (7.7%), steel (7.0%), and machinery (4.1%). In comparison, its exports growth was far more concentrated among a few items in 2018, namely semiconductors (94.2%), petroleum products (35.5%), petrochemicals (18.1%), and machinery (16.5%).⁹

In 2022, despite the negative economic impacts of Covid-19 lockdowns, China's sluggish economy, and geopolitical tensions involving China and Russia, South Korea's exports grew by 7.1% (\$690 billion) and imports by 19.5% (\$735 billion). In particular, rising oil prices in the aftermath of the Russia-Ukraine war led to increased imports of energy products and a drastic

⁸ The proportion of a product's exports growth to South Korea's total exports growth is calculated by dividing the product's year-on-year increase or decrease in exports volume by South Korea's total increase or decrease in exports volume of the corresponding year.

⁹ "2021 suchulip pyunga mit 2022 junmang" [Export and Import Trends in 2021 and Prospects for 2022], KITA, Trade Focus, no. 35, 2021, 14. The total of percentages exceeds 100% because the percentages represent the proportion (or contribution rate) of the product's export growth to South Korea's total exports growth.

surge in total import volumes. As a result, South Korea recorded a trade deficit for the first time in fourteen years. Export growth rates of several major items continued to show upward trends, with petroleum products increasing by 75.6%, automobiles by 13.6%, and steel by 10.9%. On the other hand, exports of semiconductors and LCD displays initially showed high growth rates of 8.3% and 5.1%, respectively, but started to level off after the third quarter of 2022.¹⁰

A notable change in South Korea's export structure is the drastic rise in the export growth rates of electric vehicles (EVs) (41.8%), aerospace products (40.7%), next-generation semiconductors (12.1%), and LCD displays (12.1%). The proportion of next-generation products in South Korea's total exports has been growing continuously since 2018, increasing from 14% to 19% from 2018 to 2022. The main items contributing to this trend are next-generation semiconductors (10.6%), bio-health products (2.4%), next-generation displays (2.2%), renewable energy-related products (1.4%), and EVs (1.3%).¹¹

South Korea's Trade Patterns with China

During the past 30 years, bilateral trade between South Korea and China has grown exponentially, recording a 38-fold increase in volume from \$6.4 billion in 1992 to \$241.5 billion in 2020. Due to complementary industry structures, bilateral trade patterns became highly dependent, especially for South Korea, to the point that China accounted for 24.6% of its total trade in 2020 (up from 4.0% in 1992). China has been South Korea's top export destination since 2004 for products such as semiconductors, LCD displays, synthetic resins, mobile telecommunications equipment, computers, and petroleum. On the other hand, South Korea only accounted for 6.0% of China's total trade in 2020 (up from 4.2% in 1992).¹²

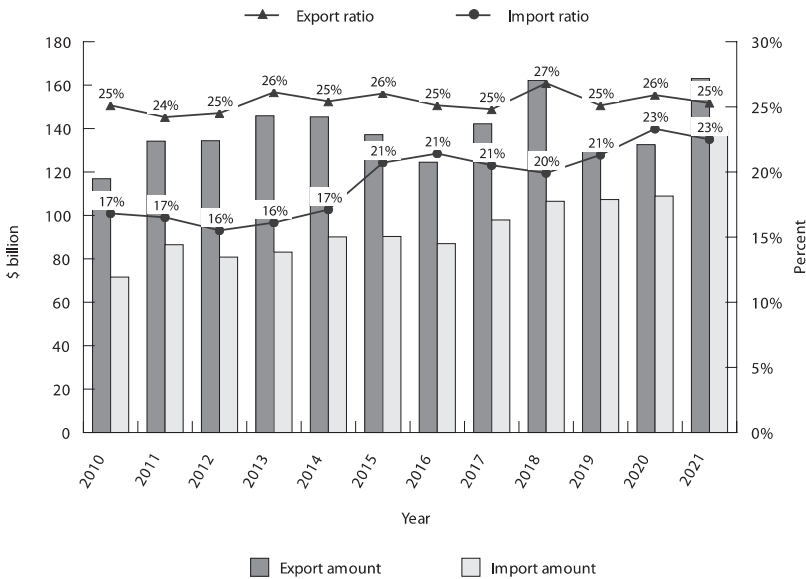
As shown in **Figure 1**, South Korea's trade with China during the past twelve years exhibits an overall increasing trend in terms of both exports and imports. Since 2010, South Korea has been exporting to China more than it imports, leading to a consistent trade surplus during the past decade. However, since 2019, South Korea's exports have dropped significantly, while imports have remained the same. In 2021, despite a rebound in exports, imports from China also grew significantly, resulting in a decreased trade surplus. In terms of trade ratio, China has accounted for an average of

¹⁰ KITA, "2022 suchulip pyunga mit 2023 junmang" [Export and Import Trends in 2022 and Prospects for 2023], Trade Focus, no. 31, 2022, 11.

¹¹ Ibid., 23.

¹² KITA, "Hanjung sukyo 30 junyun muyeokgujo byunhwawa shisajeom" [30 Years of Korea-China Diplomatic Relations: Change in Trade Structure and Implications], Trade Focus, no. 38, 2021, 6–7.

FIGURE 1 South Korea's trade volume and trade ratio with China (2010–21)



SOURCE: Compiled by authors from UN Comtrade database.

25.3% of South Korea's exports during the past twelve years. China's share in South Korea's exports peaked in 2019 at 26.8%, but has dropped since 2020. However, China's share of South Korea's imports exhibited a consistent upward trend during the 2010–21 period, growing from 16.8% in 2010 to 22.5% in 2021. The implication is that South Korea has become increasingly reliant on imports from China.

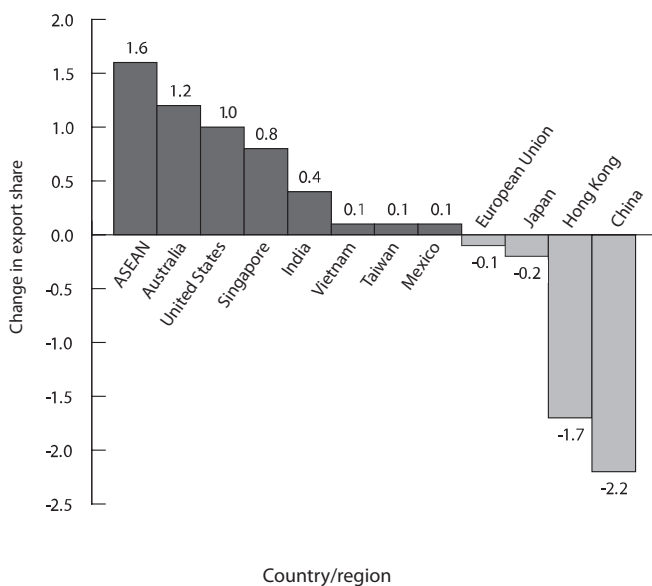
In 2021, large percentages of South Korean exports were destined for China, in particular semiconductors (38.6%), LCD displays (37.9%), synthetic resins (33.6%), telecommunications equipment (27.2%), and computers (26.7%). In 2020 and 2021, China was South Korea's top export destination, accounting for 25.9% and 25.3% of its total exports, respectively.¹³ In 2022, however, China's share in South Korea's total exports dropped to 23.1%, mainly due to China's restrictive zero-Covid policy and sluggish economy. The structure of ROK-China trade has become more characteristic of intra-industry trade. Intermediate products account for the highest share of

¹³ KITA, "Hanjung sukyo 30 junyun muyeokgujo byunhwawa shisajeom," 7.

bilateral trade items, in terms of not only exports (80.1% in 2021) but also imports (64.5% in 2021).¹⁴ Although China is still South Korea's top exporting partner as of 2022, its share of ROK exports has recorded its sharpest drop (-2.2%), while the export shares of ASEAN countries (1.6%), Australia (1.2%), and the United States (1.0%) have all increased (see **Figure 2**).

The ASEAN region has emerged as South Korea's second-largest export destination, particularly in intermediate goods such as semiconductors (22.5%) and LCD displays (33.2%). Exports of petroleum products also increased significantly (53.2%), mainly due to international oil price hikes and increased demand for fuel. South Korea has expanded its exports to Vietnam as the country has become a global production hub. Exports to Vietnam

FIGURE 2 Change in export share of top-ten export destinations (2022)



SOURCE: KITA, “2022 suchulip pyunga mit 2023 junmang” [Export and Import Trends in 2022 and Prospects for 2023], Trade Focus, no. 31, 2022.

¹⁴ KITA, “Hanjung sukjo 30 junyun muyeokgujo byunhwawa shisajeom,” 8–9.

of semiconductors (20.4%) and LCD displays (12.7%) have shown steady growth trends but are expected to slow as South Korean companies diversify and build production facilities in other ASEAN countries, such as Indonesia, in order to lower the risk of concentration and supply chain vulnerabilities.

More recently, the trade relationship between South Korea and China has become highly competitive, particularly in the mid-tech (e.g., chemical products, machinery, and automobiles) and high-tech (e.g., pharmaceuticals, medical and precision machinery, computers and office machines, electronics, and telecommunications equipment) sectors (see **Figures 3** and **4**). Since U.S.-China tensions began to escalate in 2018, South Korean mid-tech exports have been competing more with Chinese products in ASEAN markets. This is mainly due to China reorienting its exports to ASEAN countries since the U.S. market has been stifled by various trade-restrictive measures. Average export growth rates of South Korean high-tech goods to ASEAN markets dropped sharply from 14.0% (2011–18) to 3.8% (2018–20), while China's increased from 10.1% (2011–18) to 15.2% (2018–20).¹⁵

On the other hand, South Korean exports of mid-tech products to the U.S. market grew faster than Chinese products during 2018–20. This compares favorably to 2011–18, when Chinese mid-tech exports grew at 7.6% and South Korean exports grew at 5.3%. In the high-tech sector, however, exports of both South Korean and Chinese products dropped, although China recorded a more modest decrease (-4.6%) than South Korea (-7.9%).

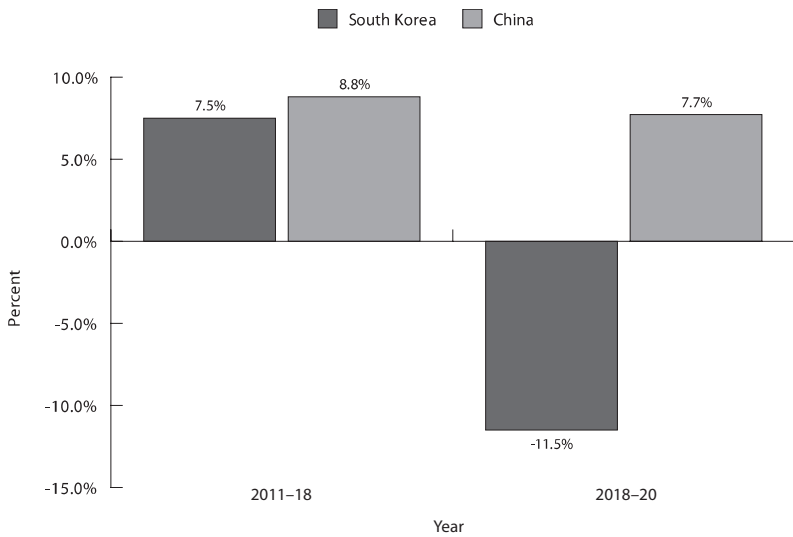
South Korea is also highly dependent on China for imports of the raw materials used in various manufactured products. Among the 3,941 imports that are more than 80% reliant on a single source, almost half (1,850 items) are from China. In particular, 100% of South Korea's magnesium ingots (an essential input for producing the aluminum alloy used in automobile bodies, vehicle seat frames, and lightweight aircraft), 94.7% of its tungsten oxide (used in medical devices and semiconductors), and 83.5% of its lithium hydroxide (used in EV batteries) rely on China as the dominant import source.¹⁶

Amid intensifying U.S.-China tensions, China has been strengthening its manufacturing capacity to become more self-sufficient in key strategic technology sectors, including semiconductors and LCD displays, which are South Korea's main export items. As a result, ROK-China competition has been intensifying in many third-country markets, especially in ASEAN countries. Although China is still South Korea's top export destination, the changing structure of China's domestic economy and its participation in global value chain activities are causing changes to bilateral trade patterns.

¹⁵ KITA, "Hanjung sukyo 30 junyun muyeokgujo byunhwawa shisajeom," 36–39.

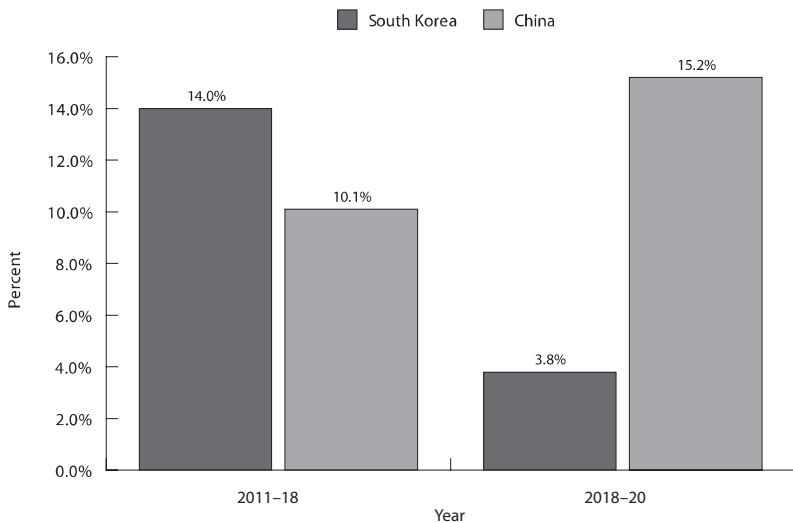
¹⁶ *Ibid.*, 40.

FIGURE 3 Annual average export growth rates in mid-tech sectors in the ASEAN market



SOURCE: KITA, “Hanjung sukjo 30 junyun muyeokgujo byunhwawa shisajeom” [30 Years of Korea-China Diplomatic Relations: Change in Trade Structure and Implications], Trade Focus, no. 38, 2021.

FIGURE 4 Annual average export growth rates in high-tech sectors in the ASEAN market



SOURCE: KITA, “Hanjung sukjo 30 junyun muyeokgujo byunhwawa shisajeom.”

South Korean exports of manufactured products to China have been dropping even though China's consumer goods and services markets have been growing. South Korea's export volumes in the mid- and high-tech sectors have also been deteriorating in world markets as a result of heightened competition with Chinese technology products. These changes warrant a serious review and drastic change of trade strategy to focus attention on the strategic aspects of key technology sectors as part of South Korea's foreign trade policy.

Principal Challenges to South Korea's Economic Statecraft

As the asymmetric economic interdependence between China and South Korea deepens, South Korea increasingly worries about which structural vulnerabilities could be exploited politically. To understand the ways in which structural vulnerabilities affect South Korea's foreign policy, this section reviews three cases of the dynamics at play among China, the United States, and South Korea during the past decade.

The first case concerns the TPP. In late 2010, the United States requested that South Korea join TPP negotiations. Because the TPP not only served business interests but also strategic interests to counteract China's economic sway in the region, China responded by engaging in FTA negotiations with South Korea as a means to counterbalance U.S. influence and pressure it to not join the TPP.¹⁷ Seoul pursued these negotiations, believing that its best interests are in capitalizing on bilateral FTAs with three major markets (the United States, the EU, and China) to become a global trading hub. Washington, however, pressured Seoul to reconsider placing FTA negotiations with China ahead of the TPP.¹⁸

Second, the China-led Asian Infrastructure Investment Bank (AIIB) created another strategic dilemma. When the AIIB, which enhances infrastructural investment in Asia, was proposed by China in 2013, South Korea was reluctant to support it because of U.S. opposition to an initiative that might dilute the influence of postwar Bretton Woods institutions like the World Bank and the Asian Development Bank.¹⁹ Even though South Korean businesses would stand to gain from infrastructure projects built through AIIB funding, Seoul stayed silent for almost two years until the deadline

¹⁷ Ann Capling and John Ravenhill, "Multilateralising Regionalism: What Role for the Trans-Pacific Partnership Agreement?" *Pacific Review* 24, no. 5 (2011): 553–75.

¹⁸ Doug Palmer, "U.S. Encourages South Korea to Join Trans-Pacific Trade Talks," Reuters, April 3, 2013, <https://www.reuters.com/article/us-usa-trade-asiapacific-idUSBRE93210D20130403>.

¹⁹ Saori N. Katada and Jessica Liao, "China and Japan in Pursuit of Infrastructure Investment Leadership in Asia," *Global Governance* 26, no. 3 (2020): 449–72.

to become a prospective founding member of the new bank approached. Weighing economic values against security concerns, South Korea finally jumped on the bandwagon and signed on as a founding member in 2015 with 56 other countries.

The third case is China's economic coercion of South Korea after it decided to deploy the Terminal High Altitude Area Defense (THAAD) system. While South Korea allowed the United States to install the system to protect against potential strikes from an increasingly erratic North Korea, China claimed that the powerful radar that THAAD uses to detect missiles would undermine its conventional and nuclear deterrence and viewed the deployment as proof of U.S. plans to encircle China and contain its rise.²⁰ Accordingly, China exerted full-fledged pressure on South Korea by applying economic tools that included the cancellation of popular cultural exchanges, the suspension of Chinese tourism to South Korea, and various non-tariff measures against South Korean goods and services.²¹ Faced with China's economic coercion, South Korea did not back down on the deployment of THAAD. Instead, the Moon Jae-in government sought diplomatic compromises, known as the "three no's": no additional THAAD deployment, no integration into a U.S.-led regional missile defense system, and no participation in a trilateral military alliance with the United States and Japan.²² South Korea reportedly even pledged to restrict the operation of the THAAD system.²³

In these cases, South Korea's concerns are twofold. First, the country is highly vulnerable to geoeconomic pressure because, as discussed in the previous section, the pattern of economic interdependence with China is highly asymmetric. Second, escalating U.S.-China rivalry forces South Korea to devise a complex approach to economic interdependence that does not irk China and at the same time guarantees U.S. security protection.

By the late 2010s, when U.S.-China competition moved from trade to advanced technology, South Korea's dilemmas had magnified. National security concerns have soared, and technological competition has been recognized as crucial to strategic competition because advanced technologies such as semiconductors and artificial intelligence are dual-use and can benefit society but also pose threats to national security. The United States' call to

²⁰ Michael D. Swaine, "Chinese Views on South Korea's Deployment of THAAD," *China Leadership Monitor*, February 14, 2017.

²¹ For additional context, see "China Opposes Possible U.S. THAAD Deployment in ROK," *China Daily*, February 13, 2016, http://www.chinadaily.com.cn/world/2016-02/13/content_23465685.htm.

²² Bonnie S. Glaser and Lisa Collins, "China's Rapprochement with South Korea: Who Won the THAAD Dispute?" *Foreign Affairs*, November 7, 2017, <https://www.foreignaffairs.com/articles/china/2017-11-07/chinas-rapprochement-south-korea>.

²³ Kang Seung-woo, "Seoul Reiterates That '3 Nos' Policy Is Not Commitment to China," *Korea Times*, August 10, 2022, https://koreatimes.co.kr/www/nation/2023/03/120_334199.html.

its allies and partners to join its efforts to lessen imports in critical sectors and mitigate China's weaponized interdependence is difficult to answer for third parties like South Korea that develop key technologies exported to the Chinese market.²⁴ Likewise, through retaliatory measures, including tariffs, export controls, and regulatory mechanisms, and its "dual circulation" strategy to achieve market self-sufficiency and technological self-reliance in critical sectors, China has fostered closer economic ties with South Korea as a significant supplier of capital and advanced technologies.

Viewed in this way, several key challenges to South Korea's economic statecraft emerge. First, South Korea's structural vulnerabilities critically concern supply chain disruptions. Because global supply chains for South Korean tech companies are heavily concentrated in China, when disruptions occur, the entire supply chain can be severely damaged. For example, due to the Covid-19 outbreak in early 2020, which caused the closure of auto parts factories in China, South Korean automakers found it difficult to import parts and thus temporarily stopped production at their domestic factories. As China becomes a global manufacturing hub, South Korean industries rely more on Chinese imports and the local production of intermediary goods, which enables them to increase their competitiveness. As in the case of semiconductor manufacturing, South Korean companies need to manage the risks associated with reshaping the supply chain to account for possible disruptions.

The second challenge is single-source dependencies. Reliance on a single supplier or a small group of suppliers from a single country for critical components or raw materials creates vulnerabilities. As a dominant supplier of rare earths, China banned their export to coerce Japan following the 2010 territorial dispute over the Senkaku/Diaoyu Islands. China is the primary producer and supplier of various mineral resources essential to key South Korean industries like electronics, steel, EVs, and renewable energy. Therefore, decreasing vulnerability to disruptions in the supply of raw materials is crucial for South Korea to ensure not only the resilience and stability of its companies' global supply chains but also its strategic autonomy.

Third, the presence of structural vulnerabilities means that South Korea is susceptible to economic coercion. As seen in Beijing's retaliations over the deployment of THAAD, China can easily weaponize interdependence by exploiting multiple chokepoints in supply chains, especially for critical minerals, to affect South Korea's foreign policy. To mitigate this threat, South Korea should consider strategies that diversify trade and investment and strengthen domestic industries. It could also work together with like-

²⁴ Adam Segal, "Huawei, 5G, and Weaponized Interdependence," in Drezner, Farrell, and Newman, *The Uses and Abuses of Weaponized Interdependence*, 149–66.

minded countries to address challenges posed by China's coercive behavior and take collective action by sharing information, coordinating policies, and imposing sanctions.

A fourth set of challenges come from the U.S. decoupling strategy. As seen above, South Korea has its own reasons to reduce overdependence on China, but it also has much to lose from decoupling, both economically and strategically. While Seoul is well aware of China's growing military expansion in East Asia, China poses no immediate security threat to South Korea. Rather, Seoul is mindful of Beijing's relationship with Pyongyang, believing that only China can influence and change North Korean behavior. Thus, South Korea needs a pragmatic approach to the structural dilemma—one that is capable of accommodating U.S. demands while at the same time courting China by sending a signal that it does not exclude the country.

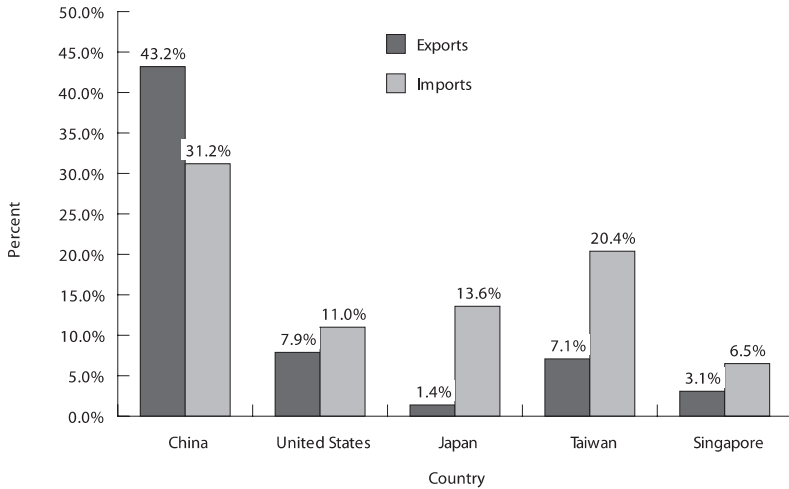
South Korea's Strategic Approach to Economic Interdependence in Semiconductors

The semiconductor industry has become a critical sector for maintaining leadership in the global competition in advanced technologies. As a critical component that is used as an input in producing almost all technical devices, ranging from electronic home appliances to military weapons, the semiconductor sector and its supply chains increasingly rival oil and gas in terms of strategic importance in international relations. Several major economies in the Asia-Pacific region, such as China, Japan, South Korea, Taiwan, and the United States, play pivotal roles in the global semiconductor industry. Such concentration in the supply of semiconductors among several major players enables the “weaponization of the supply chain.” As a result, the ROK government has placed strengthening the resilience and stability of the sector's supply chains high on the agenda of its economic security policy.

South Korea's Position in the Global Semiconductor Supply Chain

South Korea is an active player in the global semiconductor supply chain, as both a major exporter and importer of various products, components, materials, and equipment. Its top export destination is China, which accounts for 43.2% (\$41.2 billion) of South Korea's total exports of semiconductor components and equipment (see **Figure 5** for an overview of South Korea's major export partners). Combined with exports to Hong Kong, the share of Korean semiconductor exports to China is an overwhelming 61.5%. After China and Hong Kong, Vietnam is South Korea's third-largest export partner (9.6%), followed by the United States (7.9%) and Taiwan

FIGURE 5 Share of South Korean semiconductor exports and imports per major country (2020)



SOURCE: Korea Institute for International Economic Policy (KIEP), “Mijung bandoche pegwon gyungjenggwa global gonggeubmang jeyun” [U.S.-China Competition in Semiconductors and Global Supply Chain Restructuring], Research Report, no. 21–28, 2021.

(7.1%). As such, the top-five export partners account for 86.1% of South Korea’s semiconductor exports.²⁵

The largest share of South Korean semiconductor exports is in memory semiconductors, 71.3% of which are exported to China.²⁶ The second-largest export item is system semiconductors, for which the highest share of exports goes to China with 46.6%. Vietnam is the second-largest importer (17.4%), followed by Taiwan (12.5%), the United States (2.6%), and Japan (0.9%). China also accounts for the largest share of South Korean semiconductor manufacturing equipment exports, at nearly 70%.

For semiconductor materials, such as silicon wafers, die-bonding film, and lead frames for manufacturing integrated circuits, China also accounts for the largest share of South Korean exports (33.4%), followed by Vietnam (16.6%) (see **Figure 6**). The two countries are major importers of Korean-

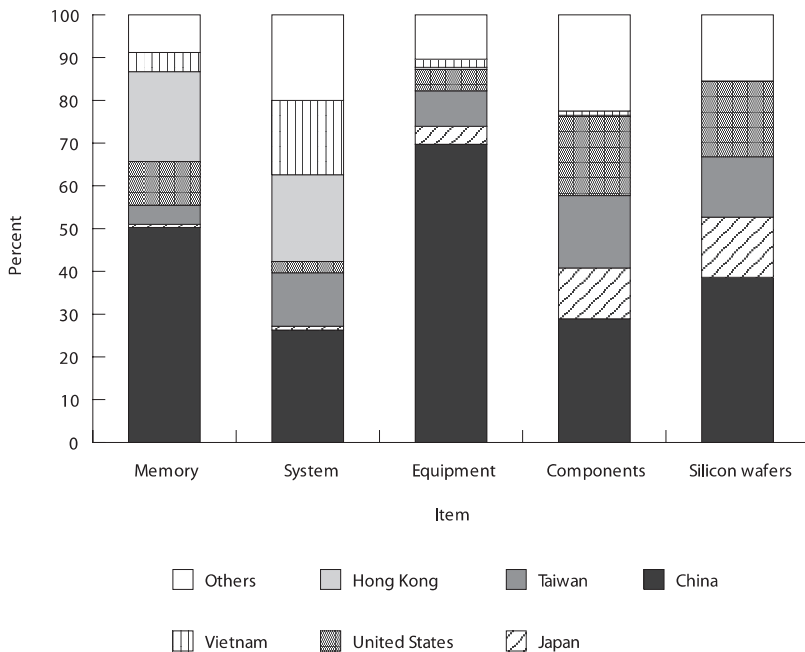
²⁵ Korea Institute for International Economic Policy (KIEP), “Mijung bandoche pegwon gyungjenggwa global gonggeubmang jeyun” [U.S.-China Competition in Semiconductors and Global Supply Chain Restructuring], Research Report, no. 21–28, 2021, 160–61.

²⁶ *Ibid.*, 162.

produced materials for semiconductor manufacturing due to the fact that South Korean companies that invested in China and Vietnam are importing those products as inputs for their local production facilities.

In terms of imports, South Korea is dependent on China (31.2%), Taiwan (20.4%), Japan (13.6%), the United States (11.0%), and Singapore (6.5%). The top-five importers of South Korean semiconductor products also account for 82.7% of the country's total semiconductor imports. System semiconductors contribute the largest share of import items, accounting for 39.1% of South Korea's total semiconductor imports. This is mainly due to the fact that South Korean companies that do not produce system semiconductors import them from abroad instead of buying them from domestic competitors. Its top import partner for system semiconductors is Taiwan, which accounts for 44.6%. The second-largest exporter of system semiconductors to South Korea is the United States (13.6%), followed by China (10.6%) and Japan (7.6%).

FIGURE 6 Share of South Korean exports per semiconductor item (2020)

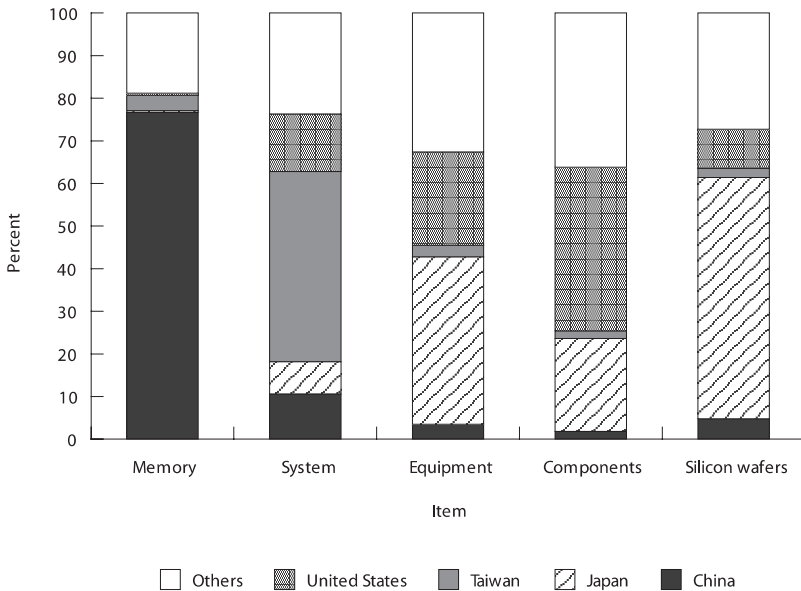


SOURCE: KIEP, "Mijung bandoche pegwon gyungjengwa global gonggeubmang jeyyun."

In total, these four countries account for 76.4% of South Korea's total imports of system semiconductors.²⁷

The second-largest share of semiconductor imports is memory semiconductors, which account for 31.7% (\$18.1 billion) of total imports. Memory semiconductors are mostly imported from China (76.7%) (see **Figure 7**). When combined with imports from Hong Kong, the total share amounts to an overwhelming 78.3%. In total, the combined imports of system semiconductors and memory semiconductors from China account for a significant percentage of South Korea's total semiconductor imports. The reason behind this highly dependent import structure is that South Korea's major semiconductor industries and their manufacturing processes are strongly connected to the semiconductor production processes in China.

FIGURE 7 Share of South Korean imports per semiconductor item (2020)



SOURCE: KIEP, "Mijung bandoche pegwon gyungjenggwa global gonggeubmang jepyun."

²⁷ KIEP, "Mijung bandoche pegwon gyungjenggwa global gonggeubmang jepyun," 151–52.

Companies such as Samsung and SK Hynix have factories located in China that process the semiconductor components, materials, and equipment that are made in South Korea and then re-import them back to the country.

In the case of semiconductor manufacturing equipment, South Korea imports most of these products from Japan (39.3%), the United States (21.9%), and Singapore (19.9%). As for components for semiconductor manufacturing equipment, it imports 38.4% from the United States and 21.8% from Japan. Unlike the previous cases, imports of semiconductor manufacturing equipment and their components, which require high-tech manufacturing capabilities and better quality control, are mostly imported from Japan and the United States. On the other hand, semiconductor products that are more price-competitive tend to be imported overwhelmingly from China.

Supply Chain Risks Faced by South Korea's Semiconductor Industry

The reason behind South Korea's strong dependence on the Chinese market as a trading partner for semiconductor exports and imports is that semiconductors are an intermediate product that takes the form of intra-industry trade. Export and import volumes and destinations are determined based on where companies decide to invest and build their semiconductor production facilities. South Korea has been importing semiconductor products that are processed in South Korean semiconductor manufacturing facilities located in China that use the semiconductor components and equipment that were originally exported from South Korea.

More recently, however, trade volumes of semiconductors between South Korea and China have been showing signs of decreasing due to the establishment of integrated production systems in Korean-invested Chinese manufacturing facilities. Several South Korean semiconductor companies have built local manufacturing facilities in China in order to maintain closer proximity to local customers of their products. For example, China accounts for more than 50% of the global demand for NAND flash products.²⁸ As a result of demand-induced foreign direct investment by South Korean semiconductor firms, intra-industry trade volumes have actually dropped. However, at the same time, these companies have also expanded domestic production facilities within South Korea, while striving to diversify export and import sources of semiconductor products. Such efforts have enabled South Korea to enjoy continuous growth in trade volumes with various foreign partners. Furthermore, FDI by South Korean semiconductor firms in foreign markets has also led to increased exports of semiconductor materials, components, and equipment. This trend coincides with recent efforts by the

²⁸ KIEP, "Mijung bandoche pegwon gyungjengwa global gonggeubmang jepyun," 170.

ROK government to promote its domestic semiconductor industry, which began in earnest after the semiconductor product shortage in the aftermath of Japan's export restrictions on key materials. In June 2022 the Japanese government removed South Korea from the white list for imposing export controls on dual-use goods, resulting in strengthened export controls on three types of intermediate items needed for manufacturing semiconductors in South Korea.

As a consequence, South Korea's high reliance on China for its semiconductor trade can be a major supply chain risk if there is ever any disturbance in the continuous flow of semiconductor products between the two countries. Any form of export control that restricts the exports of South Korean semiconductor products to the Korean-invested semiconductor facilities in China would upset the supply chain, with negative impacts on South Korean firms in terms of not only sales revenue but also their R&D and investment performance. At the same time, South Korea should also consider how quickly the Chinese semiconductor industry is becoming competitive, backed by the Chinese government's will to strengthen its global presence in semiconductors and other high-tech sectors. While China still lags one generation behind in the advanced stages of the semiconductor manufacturing process (i.e., silicon wafers), it currently holds an overwhelming share of the semiconductor packaging process, on which South Korea is highly reliant. Furthermore, as shown above, South Korea's strong dependence on China for exports and imports of memory semiconductors is also a potential supply chain risk in the event of any geopolitical incidents in the Asia-Pacific region.

Notably, the semiconductor industry itself features a monopolistic structure which is inherent in most high-technology areas. Currently, there are more than 50 semiconductor products and technologies for which the global market share of a single import source exceeds 65%.²⁹ Advanced technology areas tend to be dominated by certain global firms and countries that form a global supply chain among themselves. Such dominance is further strengthened by global demand for the products and technology, which is expected to further grow in the era of the digital economy. In the global semiconductor market, semiconductor companies from advanced economies are currently dominating the advanced stages in the manufacturing process. For example, Japan, the United States, and the Netherlands are the dominant sources of imports for semiconductor manufacturing equipment. Therefore, South Korea is highly reliant not only on China at the lower levels in the semiconductor manufacturing process but also on Japan and the United States at the higher levels.

²⁹ KIEP, "Mijung bandoche pegwon gyungjengwa global gonggeubmang jepyun," 175.

Most of the dominant major sources and players in the global semiconductor supply chain are located in Northeast Asia. Semiconductor supply chains are thus highly vulnerable to any disruptions caused by natural disasters or geopolitical tensions in the region. More worrisome is the fact that the escalating U.S.-China tensions over leadership in the global semiconductor market are increasingly being influenced by geopolitical tensions in the Asia-Pacific. Such tensions, which often take the form of export controls, foreign investment restrictions, and other disruptions to the stable supply of key inputs in the semiconductor supply chain, are likely to have a largely negative effect on semiconductor firms and the trade performance of countries.

Prospects for Global Semiconductor Supply Chains

The Covid-19 pandemic had a major impact on global supply chains, raising concerns about efficiency and low-cost production lines while increasing awareness of the need for stable and resilient supply chains. As a result, the diversification of supply sources and stockpiling of critical resource materials have become important strategies for achieving this goal. Technological advancements that enable automation of production processes have improved domestic investment conditions for companies while also enabling governments to provide more incentives for reshoring businesses that have made investments abroad. As trade protectionism and economic nationalism spread, existing supply chains will inevitably change.

Chinese industries have also been undergoing structural changes, resulting in higher labor and production costs, thereby weakening China's current position in global and regional supply chains. Current tensions with the United States are also working against China. Foreign companies that are contemplating making further investments in China recognize the increased non-economic costs and are moving their production facilities to other Asian countries. Such is the case with Vietnam, which has concluded FTAs with many countries, contributing to more competitive trade and investment conditions and increasing its attractiveness as a new production hub in the region.

The implications of these developments for South Korea are that its high dependence on and concentration in certain foreign import sources and export destinations may have to be reshuffled in the medium to long term to address future unexpected shocks. While decoupling or even de-risking from China using highly restrictive measures such as export controls might be unfeasible, it may be a more practical option for South Korea to begin reducing the share of its semiconductor trade. At least while U.S.-China tensions continue, South Korea will need to seek more viable options through

diversifying its semiconductor trade partners and reconsidering its existing strategy of expanding manufacturing capabilities in the Chinese market.

Besides China, the policies of other major countries in the semiconductor industry also have severe implications for their trading partners that are linked through the supply chains. Since these countries can dominate certain technologies with their high-tech prowess, their policies tend to have the greatest impact on the global supply chain. Examples include U.S. policies related to the semiconductor industry, such as the passage of the 2022 CHIPS and Science Act, which strengthens export controls against China, and efforts to establish the “Fab 4” chip alliance among the four major semiconductor manufacturing countries excluding China. Depending on how these policies are implemented, there is a high probability that the existing global supply chain for semiconductors could be reconfigured with the United States at its new center. The Biden administration is committed to reshoring semiconductor capabilities by aggressively using industrial subsidies to strengthen the domestic manufacturing capacity. Due to the broad applications of semiconductors, which include military uses, leadership in the global semiconductor market is not only an economic issue but also one of national security.

As part of its efforts to navigate the conditions attached to subsidies offered by the CHIPS and Science Act, the ROK government has requested that the United States provide more leeway for Korean-invested production facilities operating in China. While the guardrail provisions in the act prohibit any material expansion that increases production capacity by 10% in existing facilities, the ROK government has requested that these limits be expanded to avoid creating any circumstances that illegitimately burden foreign companies looking to invest in the United States. In a coordinated move, South Korean semiconductor companies have also petitioned the U.S. Commerce Department for clarification of the conditions attached to receiving subsidies.³⁰

Prioritizing economic security, the United States is including its allies and partners in measures to strengthen its semiconductor supply chain. The semiconductor supply chain is currently fragmented among the countries and technology firms that have dominated its respective sectors, and the existing structure cannot be easily transformed. The U.S. government’s efforts to become self-sufficient by strengthening the domestic semiconductors supply chain will take time; in the meantime, it will need to cooperate with its partners and allies to reform the current structure. It is also becoming evident that the new rules and standards used to demarcate the line between

³⁰ “Korean Government Steps Up to Help Semiconductor Businesses amid U.S.-China Tensions,” *Korea JoongAng Daily*, May 25, 2023.

partners and non-partners for configuring new supply chains include stricter environmental and labor provisions, protection of proprietary technology through strengthened intellectual property rights, and fair competition. As a consequence, countries that are not able to meet the new criteria for entering the supply chains may risk being alienated from global semiconductor commercial activity. The burden for commercial businesses to use environmentally friendly technology and labor-friendly production methods will increase, also contributing to further concentration of the semiconductor industry in players that can afford the social costs in the manufacturing process.

Strategic Approach to the Semiconductor Industry

Considering South Korea's current position in the global semiconductor market, its most important task should be increasing its strengths by upgrading its technological capabilities to remain an attractive partner for advanced countries in the supply chain (such as the United States and Japan) and to maintain the technology development gap with fast-growing developing countries (i.e., China). To this end, the ROK government should pursue an active strategy to support its domestic semiconductor businesses with various fiscal incentives so that companies will engage in more R&D to develop foundational and applied technologies and support the development of skilled personnel to work in the industry. As part of these efforts to strengthen the country's competitiveness, the government announced the K-Semiconductor Strategy to help promote its domestic semiconductor industry in May 2021. The strategy comprises five major strategies and seventeen tasks (see **Table 1**).

As shown above, South Korea's national strategy for the semiconductor industry aims to provide for its overall growth through various support measures, with renewed interest in fostering growth in advanced technology areas. The basic approach appears to be the promotion of domestic competitiveness in order to engage more actively in the global semiconductor supply chain and maintain interdependence with major semiconductor countries. There is notable emphasis on the importance of developing skilled experts and human resources. Due to the features of technology that are mostly transferred or leaked through personnel or joint R&D projects, there is also renewed emphasis on the need for strengthened management of these human resources as part of a strategy for technology protection. This has instigated a number of efforts to realign South Korea's strategy for protecting key strategic technologies through the combined efforts of various administrative offices. The strategy covers government-wide initiatives to

TABLE 1 South Korea's K-Semiconductor Strategy

Strategy	Tasks
1. Establish the K-Semiconductor Belt to stabilize supply chains	1. Manufacturing base
	2. Components, materials, equipment
	3. Advanced equipment
	4. Packaging
	5. Fabless
2. Expand infrastructure investment for becoming a hub in semiconductor manufacturing	6. Tax credits
	7. Financial support
	8. Improvement of regulations
	9. Infrastructure
3. Invest in developing skilled personnel, markets, and technology for the semiconductor industry's growth	10. Personnel development
	11. Coalition and cooperation
	12. Technology development
4. Strengthen crisis response mechanisms for promoting domestic semiconductor ecosystem	13. Legislation of a special act for semiconductors
	14. Semiconductors for vehicles
	15. Technology protection
	16. Carbon neutrality
5. Create domestic technology for industrial water	17. High purity industrial water technology

establish a preemptive system for protecting critical technologies, prevent leakage of human resources, establish a domestic system for maintaining strategic resources, protect small and medium-sized enterprises, promote technology capabilities, prevent cyber theft of technology, and strengthen government-wide efforts to promote international cooperation and trade. As such, the South Korean government's efforts to maintain economic interdependence with the global community can be viewed as being focused on strengthening and fostering domestic capacities, resources, and skills. This is not very different from how other countries are addressing the risks and vulnerabilities caused by the current geopolitical tensions in the region.

South Korea should also take part in international efforts to establish rules to prevent countries from resorting to unilateral sanctions against the semiconductor trade. Rules to ensure that technology is protected from illegal attempts to obtain proprietary knowledge and technology skills may also

need to be strengthened. South Korea is a victim of these attempts due to its position as a major semiconductor manufacturing country with high levels of technology.

Against this backdrop, while it is important to maintain cooperation with China, it is also necessary to reconsider whether South Korea needs export controls and foreign investment restrictions to protect any leakage of key national technologies. To this end, the government should (1) constantly monitor risks to its semiconductor supply chain, (2) prevent leakage of skilled personnel and promote the recruitment of new personnel, and (3) maintain the technology gap in areas where it has a comparative advantage through strategic R&D investment in innovative technology areas.

Strategic Approach to the Critical Minerals Supply Chain

The stable supply of critical minerals that are used as inputs for manufacturing batteries for EVs has gained increasing importance amid the global efforts to address climate change issues. Currently, due to various economic and environmental reasons, the supply of critical minerals inputs is dominated by not only a limited number of countries with abundant resources but also those with sufficient levels of processing technologies and lax environmental regulations. This has also enabled the weaponization of critical minerals supplies, pushing industrialized countries to beef up their own supplies of critical minerals and to form global partnerships to collaborate on access to the clean energy inputs. South Korea, which owns several key large firms that produce EVs and batteries as well, has a high stake in securing and strengthening its supplies of critical minerals. This section examines the importance of the critical minerals supply chain in the context of economic security and introduces South Korea's approach to address the issues and challenges arising from economic interdependence.

The Global Critical Minerals Supply Chain

Critical minerals are essential raw materials that are used in a variety of industries, including renewable energy equipment, EVs, high-capacity batteries, and defense articles. Global demand for critical minerals has been on the rise during the transition to clean energy in major economies and the growth of related green industries. Demand is expected to rise fourfold by 2040 due to the zero-carbon policies pursued by major economies and the global transition to clean energy-based infrastructure.³¹

³¹ Ministry of Trade, Industry and Energy (ROK), *Haekshim gwangmul hwakbo junryak* [Critical Minerals Security Strategy] (Seoul, February 2023).

Despite this high level of demand, the supply of critical minerals is concentrated in only a few countries, including China and several countries in Africa and Latin America. For various reasons, these resource-abundant countries are resorting to export-restrictive measures that pose a severe risk to the stable supply of critical minerals for resource-importing countries. Due to the concentrated supply and production, there is increased competition among major importers for what resources are available. The Covid-19 pandemic, U.S.-China tensions, and the Russia-Ukraine war have also exacerbated the situation by raising concerns about China's possible imposition of export controls on raw materials. With these risks, prices have surged: the price of lithium has increased by 13.3 times and nickel by 2.1 times. Relatedly, there are also environmental issues during the refining process of these critical raw materials that serve as another barrier for efforts to export them to resource-importing countries.

By 2030, the global EV market is expected to grow tenfold and the battery market thirteenfold. EV production requires six times the amount of critical minerals as the production of diesel motor vehicles. Every stage of the global EV and battery market is largely controlled by China.³² While the mining stage is distributed among various countries, China dominates the processing and production stages and has a commanding share of the supply chain in key critical materials for manufacturing EV batteries, such as lithium, nickel, cobalt, and graphite.

While global sales of automobiles were weak during the pandemic, EV sales rose by nearly 100% year-on-year, resulting in 6 million vehicles sold in 2021 compared with 3.3 million in 2020. The growth in global sales is expected to continue for quite some time, mainly due to aggressive subsidization policies by major economies promoting the EV industry and restrictions on selling diesel motor vehicles. The high demand for EVs and their batteries will also affect the demand for critical minerals, which will increase up to 42-fold by 2040.³³

Supply Chain Risks for Critical Minerals

Global demand for critical minerals is expected to grow exponentially due to economic development and industrial upgrades in both developing and advanced countries. In particular, China's desire to become a leading nation in advanced technologies is reportedly one of the major reasons behind the surge

³² For an illustration of China's dominance, see the chart showing the concentration of materials for major countries along the EV and batteries supply chain in International Energy Agency (IEA), "Global EV Outlook," May 2022, <https://iea.blob.core.windows.net/assets/ad8fb04c-4f75-42fc-973a-6e54c8a4449a/GlobalElectricVehicleOutlook2022.pdf>.

³³ Ibid.

in demand for critical minerals. More generally, the recent series of global shocks have contributed to the rise in prices of resources and raw materials, compounding the problem of supply chain vulnerability. Furthermore, while the mining of certain critical minerals is concentrated in several countries, such as 69% of cobalt in Congo, 64% of graphite in China, and 52% of lithium in Australia, the refining process is mainly concentrated in China—87.1% of raw earths, 57.8% of lithium, 64.7% of cobalt, and 40.0% of copper.³⁴

The development of new mines is not an easy task, mainly due to potential conflict with a local community over environmental problems caused by the mining process and the long time required (fifteen to twenty years) for a mine to become operational. Governments can also attempt to nationalize the ownership of critical minerals or impose export controls to leverage their dominance in raw materials. For example, Mexico passed legislation to nationalize its lithium industry, established a state-owned lithium corporation in 2022, and inaugurated a coalition with other countries that own lithium reserves that account for 58% of global lithium production.³⁵ Similarly, in 2022 and 2023, Indonesia announced plans to impose export restrictions on bauxite and copper ore as part of measures to increase the value of its mineral reserves by inducing foreign investment in domestic production facilities that process them.³⁶ Export controls are also used to secure domestic supplies, expand government revenues, and influence international prices.

South Korea's Strategic Approach to Critical Minerals

In February 2023 the ROK government announced a strategy to stabilize supply chains for critical minerals to mitigate import reliance on certain countries and use domestic mineral resources to the extent possible (see **Table 2**).³⁷ To this end, 33 critical minerals were selected, and among them 10 were identified as “strategic critical minerals” needed for supply chain resilience in advanced technology industries such as semiconductors and EVs. The ten strategic critical minerals are lithium, nickel, cobalt, graphite, manganese, cerium, lanthanum, neodymium, dysprosium, and terbium. The criteria for selection considered each mineral's overall impact on the economy and possible supply chain risks. These included the volume of and increase in imports, importance to industry (i.e., value added), role in achieving net-zero carbon levels, concentration of resources, instability in supply chains, risk response capabilities, and environmental, social, and corporate

³⁴ IEA, “The Role of Critical Minerals in Clean Energy Transitions,” May 2021.

³⁵ KITA, “Critical Minerals for Batteries Supply Chain: Lithium,” Trade Focus, no. 21, 35.

³⁶ Ibid.

³⁷ Ministry of Trade, Industry and Energy (ROK), *Haekshim gwangmul hwakbo junryak*.

TABLE 2 South Korea's critical minerals strategy

Vision	Sustainable advanced industry through a stable critical minerals supply chain	
Objectives (by 2030)	Ten strategic critical minerals: Reduce dependence on certain countries to 50% level; increase recycling ratio to 20%	
	Strategies	Tasks
1.	Strengthening crisis response capacity	1. Global map for critical minerals 2. Early-warning system
2.	Diversifying sources of critical minerals	3. Strengthening of bilateral and multilateral cooperation 4. Development of foreign and domestic reserves 5. Recycling infrastructure 6. Increased stockpiling
3.	Establishing infrastructure for systemic management of critical minerals	7. Realignment of rules and regulations 8. Training and technology development

SOURCE: Ministry of Trade, Industry and Energy (ROK), *Haekshim gwangmul hwakbo junryak* [Critical Minerals Security Strategy] (Seoul, February 2023).

governance (ESG) aspects. As part of its strategy to secure critical minerals, the government has created a global map that provides information on mines overseas that are needed for obtaining them, including information on reserves and production capacity per country and the type of minerals mined. In order to establish an early-warning system for supply chain risks, indexes for assessing the stability of the supply of minerals were also developed.³⁸

In terms of measures to strengthen cooperation in critical minerals supply chains, the government has selected 30 countries as “strategic cooperation countries” based on an analysis of each country’s mineral reserves capacity, attractiveness for development, and accessibility. These countries could be subject to long-term supply contracts and financial support for mine development through memoranda of understanding on private-public cooperation projects and FTAs with renewed provisions on joint research, information exchange, and trade facilitation. On the multilateral level, South Korea has become a member of the Minerals

³⁸ Ministry of Trade, Industry and Energy (ROK), *Haekshim gwangmul hwakbo junryak*.

Security Partnership, in which members share information on related projects, engage in investment networks, establish ESG-related rules, and encourage recycling of critical minerals.

As part of its efforts to induce private investment in the critical minerals industry, the ROK government has expanded financial support and tax incentives through the Export-Import Bank of Korea and the Korea Trade Insurance Corporation. It has also reintroduced tax credits for overseas investment projects developing foreign resources (previously terminated in 2013), while expanding the scope of compensation for losses and alleviating tax burdens for foreign-affiliated companies. In order to secure domestic resource development capacity, the government also plans to establish a circulation system under which critical minerals can be recycled as well as an industrial cluster for reclaiming waste materials, recycling, distributing, and stockpiling.

Conclusion

This chapter has explored how weaponized interdependence and decoupling pressures have affected South Korea's foreign policy. Given its asymmetric economic interdependence with China, on the one hand, and Washington's demand for decoupling from Beijing, on the other, South Korea faces three key challenges: ensuring supply chain resilience, reducing its heavy reliance on China for critical materials, and sustaining an adequate level of economic interdependence under decoupling pressure. Focusing on the ROK semiconductor industry and the supply chain for critical raw materials, this chapter examined the country's efforts to address the structural dilemmas that it faces in managing supply chain disruptions, decreasing vulnerabilities vis-à-vis China through diversification, and building capacity in domestic manufacturing.

In addressing these challenges, South Korea's central concern is exploring a pragmatic approach to reducing structural vulnerabilities to China while at the same time maintaining economic interdependence. In other words, the task is to strike a balance between national security and economic interdependence. This concern is widely shared. For instance, the EU perceives fewer national security risks in its relations with China than the United States, which has pressured its allies to take harder decoupling stances through its CHIPS and Science Act. Although EU-U.S. China policy on trade and technology has been aligned, the 27 EU member states remain split over how far they will follow it. The shift from decoupling to de-risking indicates that the United States is willing to accommodate its allies' demands for softening its efforts to deter China's high-tech drive. These efforts have thus

far seemed quite successful. For example, the leaders at the 2023 G-7 summit declared that they will coordinate their “approach to economic resilience and economic security that is based on diversifying and deepening partnerships and de-risking, not decoupling.”³⁹

According to the United States, de-risking involves restricting the trade of “a narrow set of advanced technologies” that are critical for national security, “technologies that could tilt the liminary balance.”⁴⁰ This means that technologies that pose risks to national security are subject to decoupling from China. However, because modern high-tech products are dual-use in nature, this could include vast sectors of U.S. manufacturing. If risks to national security are broadly framed, a de-risking policy toward China could become closer to decoupling. What is needed, then, is a collective and coordinated effort to delimit the scope of technologies and industries that are critical for national security.

South Korea’s economic statecraft needs to follow a collective and multilateral approach to establishing rules and norms to define the scope of “national security” as invoked in a de-risking effort. Further, it should work to ultimately restore an international economic order that strikes a balance between economic interdependence and national security and ensures the re-globalization of the post-pandemic world order. The government must combine this effort with other strategies that (1) constantly monitor risks to South Korea’s supply chains, (2) prevent leakage of skilled personnel and promote the recruitment of new personnel, and (3) maintain the technology gap in areas where South Korea has a comparative advantage through strategic R&D investment in innovative technology.

³⁹ “G7 Hiroshima Leaders’ Communiqué.”

⁴⁰ Paul Gewirtz, “Words and Policies: ‘De-risking’ and China Policy,” Brookings Institution, May 30, 2023, <https://www.brookings.edu/articles/words-and-policies-de-risking-and-china-policy>.