

RESEARCH ARTICLE

High technology and economic statecraft: the emergence of techno-economic statecraft in South Korea

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Abstract

This study identifies the core of Korea's economic statecraft as (1) diversification of the supply chain of high-tech industries to proactively mitigate vulnerability to economic coercion, (2) the pursuit of technological sovereignty to increase self-sufficiency in advanced technologies, (3) governance reforms to strengthen supply chain resilience, and (4) industrial policies to enhance the competitiveness of advanced industries. The four strategies mentioned above all have in common that they are predicated on the strategic utilization of high technology. Based on these traits, I define Korea's new economic security strategy as techno-economic statecraft. Korea's techno-economic statecraft has two features. First, Korea utilizes high technology as a nexus between economy and security. Second, Korea uses high technology as a nexus to link domestic and foreign policies.

Keywords: techno-economic statecraft; high technology; Korea; economic coercion; industrial policy

Introduction

The ongoing US-China technology competition is inextricably linked to changes in the nature of strategic competition. The two countries have entered into a contest over high technology because each perceives the other as an existential threat and high technology can provide a decisive advantage in the competition. In redoubling their efforts to enhance their innovation capabilities, the US and China have attempted to take advantage of high technology to exert pressure on other countries.

South Korea (Korea hereafter) is inherently reactive, as it has focused on responding to the economic coercion of major powers.¹ Since its decision to deploy Terminal High Altitude Area Defense (THAAD) in 2016, Korea has been subject to extensive economic sanctions from China. Immediately after taking office in 2018, the Trump administration not only demanded a revision of the KORUS FTA but also tried to implement a drastic increase in defense burden-sharing. In 2018, the Japanese Government took measures to control the export of key materials essential for semiconductor production to Korea. Korea's interest in economic statecraft stems from not only the substantial economic impact of economic coercion on Korea but also the recognition that risk management is important for its survival and prosperity amid rapidly increasing uncertainty.

The onslaught of US-China strategic competition has amplified the strategic dilemma for Korea. As this competition intensifies, securing a means to effectively respond to it has become an urgent priority for Korea. At the core of Korea's strategic dilemma, maintaining existing economic relations with China while strengthening security cooperation with the US has become increasingly difficult. Recognizing the limitations of reactive economic statecraft, Korea found pursuing a more active economic statecraft necessary. Realizing that the US and China have taken advantage of advanced technology as a nexus linking economy and security, Korea began to explore economic statecraft using advanced technology.

¹Lee (2022a); Lim and Ferguson (2022).

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This study aims to describe the nature of the techno-economic statecraft in Korea and its changes. South Korea's traditional techno-economic statecraft was reactive, focusing on responding to economic coercion from great powers. I argue that changes in the external environment and domestic political processes have contributed to the transformation of Korea's techno-economic statecraft. First, the US-China strategic competition and supply chain disruptions caused by the spread of COVID-19 revealed the limits of Korea's traditional reactive techno-economic statecraft. The shift in economic statecraft was daunting for Korea, which sought to separate its security from its economy. As one of the few countries with high-tech competitiveness, it has sought ways to integrate high-tech capabilities into its economic statecraft. Its key position in the supply chain of high-tech industries was an impetus for Korea to pursue proactive economic statecraft. Against this backdrop, Korea has sought to transform its economic statecraft. Second, while changes in the external environment were the catalyst for the transformation of Korea's techno-economic statecraft, the interactions between the government, business, and the National Assembly largely shaped the specific forms of Korea's techno-economic statecraft.

Theoretical discussion and main argument

Literature review

Existing studies on Korea's economic statecraft are divided into two types: (1) those that focus on strategic ambiguity as a defining feature, and (2) those that focus on Korea's response to economic coercion by major powers. The former is a structural explanation of Korea's economic statecraft, reflecting the reality of its security alliance with the US and its economic dependence on China. The latter explains the nature of Korea's economic statecraft in terms of its response to economic coercion, which it experienced several times during the 2010s. Despite these differences, the two explanations share commonalities in that they identify Korea's economic statecraft as reactive.

First, strategic ambiguity is inherent in Korea's economic statecraft because of the structural realities of the country. This explanation assumes that Korea's economic statecraft prioritizes a security alliance with the US as the foundation of its foreign policy, as well as maintaining economic relations with China as its largest trading partner.² This view focuses on a potential trade-off between strengthening the US-ROK alliance, which would help enhance Korea's security, and a strategic response that would continue its economic interdependence with China.³ Because the risks of strengthening ties with only one of the two states are great, the essence of Korea's economic statecraft depends on strategic ambiguity, which has sought to separate its security relationship with the US from its economic relationship with China (Suh, 2017).

From this perspective, Korea's reactive economic statecraft has been perceived as effective for managing relations with both the US and China, as actively pursuing a proactive economic statecraft was believed to increase strategic risks. Korea's reactive economic statecraft under the premise of strategic ambiguity not only shaped the general contours of its economic statecraft but also served as a guide for specific confrontational issues between the US and China, including the Taiwan Strait, Indo-Pacific strategy, and Hong Kong human rights issue.⁴

However, economic statecraft based on strategic ambiguity has limitations (Work, 2022). The fundamental problem with strategic ambiguity is the difficulty in satisfying both the US and China, as both expect a higher level of cooperation in their policies. Viewing Korea as a weak link in the Korea-US-Japan trilateral cooperation, China has implemented its offensive diplomacy in Korea.⁵ The US, which seeks international cooperation to contain China, also rates Korea as having the relatively low level of policy alignment among its major allies and partners.⁶ Both countries' perceptions clearly demonstrate the limitations of economic statecraft based on strategic ambiguity.

²Hyun (2021).

³Ahn (2020).

⁴Ban (2020); Huynh (2023); Lee (2021); Lee (2023).

⁵Pak (2020).

⁶Ford and Goldgeier (2021).

Second, some studies have identified the core of Korea's economic statecraft as a response to economic coercion. As the spread of economic coercion, unilateralism, and nationalism is a highly unfavorable external environment with high external dependence, responses to economic coercion occupy a central place in Korea's economic statecraft. Moreover, the economic and political implications of economic coercion are so great that the need for Korea to integrate them into its economic statecraft has increased.

Because Korea has faced new types of economic coercion, such as informal economic sanctions and weaponized interdependence, Farrell and Newman, (2019) establishing an economic statecraft that can effectively respond to them has been a challenge. The Korean Government's decision to deploy THAAD was met with immediate economic sanctions from the Chinese Government. The economic cost of China's sanctions was estimated as high as \$17 billion.⁷ Nonetheless, because China's economic sanctions were informal, finding ways to respond to them was difficult. Moreover, Korea faced the dual challenge of responding effectively to China's economic sanctions⁸ while avoiding disrupting the Korea-China bilateral relationship. Meanwhile, the Japanese Government's decision to remove Korea from its whitelist in 2018 was a classic case of weaponized interdependence.⁹ Japan strategically leveraged its key position in the supply chain of the semiconductor industry to threaten Korea's main export industry. Korea's practical need to integrate its response to economic sanctions with its economic statecraft has increased.

Analytical discussion

Limitations of existing studies

Existing studies have made significant progress in explaining the origins and nature of Korea's economic statecraft. They have been particularly successful in capturing it based on its structural constraints and experiences with economic coercion. However, they have failed to shed light on Korea's economic statecraft in three ways. First, they fail to capture dynamic changes in Korea's economic statecraft as US-China strategic competition intensifies. They also do not establish that the changes in Korean economic statecraft are closely related to intensification of US-China strategic competition. This intensification has signified that Korea's vulnerability to a volatile external environment has dramatically increased. It has triggered Korea to move from a reactive to a proactive economic statecraft to mitigate vulnerabilities. This change clearly indicates that it has attempted to depart from a reactive economic statecraft based on strategic ambiguity.

Second, Korea's use of advanced technology as a key instrument of economic statecraft is a crucial shift that previous studies have failed to identify. In response to the US and China broadening their battlefield from trade to high technology, Korea has begun to incorporate high technology into its economic statecraft. It found the potential efficacy of high-tech as a nexus between economy and security, which is another sign that it has moved away from a reactive economic statecraft based on the separation of economy and security. It has utilized its high-tech industrial production capacity to cooperate with the US reshoring policy. In addition, it has pursued policies to increase domestic self-sufficiency in core high technology. These changes underscore a dynamic change in Korea's economic statecraft that has prompted the emergence of a techno-economic statecraft.

Third, existing studies have tended to explain Korea's economic statecraft primarily in terms of foreign economic policy, such as its response to economic coercion or choice between the US and China. However, these explanations fail to incorporate the domestic foundations of economic statecraft, such as strengthening of institutional and legal foundations, technological innovation, industrial policy, and changes in governance. Korea has been quick to implement institutional and policy support to enhance competitiveness in key materials, components, and equipment sectors; legislative measures to strengthen the competitiveness of the semiconductor industry; and changes in governance to respond

⁷Kim and Lee (2020).

⁸Lim and Ferguson (2022).

⁹Kim (2021).

to changes in the external environment from an economic and security perspective. In order to systematically explain Korea's economic statecraft, we must consider both the external and domestic dimensions of economic statecraft – effective responses to changes in the external environment and strengthening of domestic capabilities to do so – as well as focus on the domestic-international nexus that links the two dimensions.

To overcome the limitations of existing studies on Korea's economic statecraft, one can attempt to rely on general theories of economic statecraft or industrial policy. For example, some studies have focused on the domestic institutional basis of economic statecraft. These include explanations that institutional constraints hinder the US Government in implementing effective economic statecraft,¹⁰ or that China effectively incorporates private interests in promoting economic statecraft.¹¹ More recently, one study analyzed the Chinese Government's use of civil-military fusion at the domestic level to shape China's economic statecraft and build a techno-security state.¹² These studies have a certain relevance in explaining Korea's economic statecraft in that they focus on the domestic institutional foundations of economic statecraft. However, because they focus on explaining the economic statecraft of great powers such as the US and China, they do not identify the domestic conditions necessary for middle powers such as Korea to pursue an economic statecraft.

Korea's economic statecraft can also be explained in the context of industrial policy (Aggarwal and Reddie, 2020; Chang and Andreoni, 2020; Weiss and Thurbon, 2021). In particular, Korea's experience with active industrial policy during the catch-up period makes it possible to explain its economic statecraft from an industrial policy perspective. However, given that high technology has never been at the core of Korea's industrial policy, its economic statecraft in the 21st century is fundamentally different from its traditional industrial policy. Korea's traditional industrial policy was based on learning, not innovation,¹³ and centered on restricting rent-seeking behavior that might occur in the provision of government support.¹⁴ Thus, it differs from the economic statecraft of pursuing industrial policies for high-tech competition and national survival in the 21st century.

The argument in brief

This study explains the dynamic changes in Korea's economic statecraft resulting from the interplay between the intensification of US-China strategic competition and structural vulnerabilities in the supply chain. First, the limits of the existing economic statecraft based on strategic ambiguity have become increasingly clear as the US-China strategic competition has intensified. As the US and China have engaged in high-technology competition, Korea's strategic value has increased, which means both the US and China have needed Korea to align its policies with their own. Second, as the US-China strategic competition intensifies, Korea has no choice but to pursue a new economic statecraft, moving away from the reactive economic statecraft that focuses on reactive responses to economic coercion.

This study identifies the core of the new economic statecraft as (1) diversification of the supply chain of high-tech industries to proactively mitigate vulnerability to economic coercion, (2) the pursuit of technological sovereignty to increase self-sufficiency in advanced technologies, (3) governance reforms to strengthen supply chain resilience, and (4) industrial policies to enhance the competitiveness of advanced industries. The four strategies mentioned above are all predicated on the strategic utilization of high technology. Based on these traits, I conceptualize the essence of Korea's new economic security strategy as techno-economic statecraft.¹⁵

Korea's techno-economic statecraft has two main features. First, Korea utilizes high technology as a nexus between economy and security. It has sought to mitigate structural vulnerabilities in the supply chain of high-tech industries through diversification and reshoring while seeking to increase self-

¹⁰Blackwell and Harris (2016).

¹¹Norris (2016).

¹²Cheung (2022).

¹³Amsden (1992).

¹⁴Chang (1993).

¹⁵Lee (2022b).

sufficiency in high-tech industries and embarking on governance reforms to strengthen public-private partnerships.

The emphasis on high technology as a nexus between the economy and security is based on the idea that it can preempt economic coercion. Having experienced economic coercion several times, Korea prioritized economic statecraft that focuses on proactively preventing economic coercion. In promoting the new economic statecraft, it is essential to eliminate the structural causes of economic coercion by mitigating vulnerabilities in the supply chains of high-tech industries.

While Korea is competitive in key high-tech industries such as semiconductors, batteries, and electric vehicles, it has structural vulnerabilities in its high-tech supply chain because of its high dependence on imports of materials, components, and equipment. As its economic rise has continued, China has become the largest trading partner of more than 100 countries worldwide. When strategically necessary, China uses asymmetric interdependence as a means of economic coercion against other countries. Like other countries, Korea has an asymmetric interdependence with China. However, Korea differs from other countries in that the two countries are interdependent through the GVC trade, which is characterized by a high share of trade in materials and components for production of final goods. The shares of Korean exports and imports of materials, parts, and equipment in the GVC trade are 27.9 percent and 29.9 percent, respectively.¹⁶

Korea's high dependence on the supply chain of high-tech industries is a major source of structural vulnerability to China. In addition, Korea is structurally vulnerable to China because establishing alternative supply chains for materials, parts, and equipment that are dependent on China is difficult in the short term.¹⁷ Recognizing this risk, Korea actively promoted techno-economic statecraft to mitigate it, which led to the emergence of techno-economic statecraft. The Korean Government believed increasing self-sufficiency and competitiveness in high-tech industries could serve as a safety net that would protect other countries relying on Korea's high-tech industries from arbitrary economic coercion.

Second, Korea uses high technology as a nexus linking domestic and foreign policies. Korea pursues techno-economic statecraft to take advantage of high technology as the “domestic-external nexus,” expecting that external economic statecraft is more effective when it is complemented by a domestic industrial policy. Industrial policies to incorporate the effects of the changing external environment, such as intensification of high-tech competition and its reverberations, into national security and survival also represent a growing need. To effectively exercise economic statecraft at the external level, Korea seeks to increase its self-sufficiency with high technology at the domestic level, while pursuing industrial policies to strengthen the competitiveness of high-tech industries.

This study focuses on the semiconductor industry, which showcases the emergence of techno-economic statecraft in Korea, for two reasons. First, the case of the Korean semiconductor industry is a prime example of how and why techno-economic statecraft takes place at the intersection of domestic-external linkage. Widespread awareness of structural weaknesses in the supply chain has provided a domestic rationale for the Korean Government's semiconductor industrial policy. Concerns about government support for *chaebols* and deregulation to limit industry concentration in the Seoul metropolitan area have made explicit support for semiconductor firms difficult. However, disruption of the semiconductor supply chain and the semiconductor industrial policies of the US and EU have become crucial catalysts to justify the semiconductor industrial policies in Korea. Given the nature of the semiconductor supply chain, which is globally dispersed and has bottlenecks that are highly dependent on a few countries, mitigating structural vulnerabilities in the supply chain has become a priority. In addition, successful mitigation of structural vulnerabilities is recognized as an effective means of countering economic coercion. Therefore, an industrial policy focused on strengthening the resilience of the semiconductor supply chain has become a key instrument of techno-economic statecraft in Korea.

Second, techno-economic statecraft does not take place in a domestic political vacuum. Despite the broad consensus on the industrial policy to strengthen the resilience of the semiconductor supply chain, it involves a difficult and complex domestic political process. Korea's semiconductor industrial policy

¹⁶Hyundai Research Institute (2023).

¹⁷KIEP (2021).

has focused on expanding tax incentives rather than large-scale subsidies like those in the US, the EU, and Japan, as a result of political compromise among various actors. While changes in the external environment, such as the strategic competition between the US and China, affect the nature of technoeconomic statecraft, the domestic political process influences its specific form and manner.

The emergence of techno-economic statecraft in Korea

In the face of intensifying technology competition between the US and China, Korea has shifted to a more preemptive and proactive economic statecraft that aims to pursue inclusive technological sovereignty and upgrade the Korea-US relationship to include cooperation in technological innovation. At the heart of the strategic shift was the establishment of a techno-economic statecraft that incorporated high technologies.

The impetus of techno-economic statecraft: economic coercion and structural vulnerability

China's economic sanctions, Japan's export restrictions, the global spread of the COVID-19 pandemic, and the fallout of the Ukraine-Russia war have exposed supply chain vulnerabilities. First, China imposed extensive economic sanctions in response to the Korean Government's decision to deploy THAAD in 2016. Korea perceived China's actions as a typical case of economic coercion, as China had imposed retaliatory measures on the grounds of conflicts over security that were not directly related to trade (Ferchen and Mattlin, 2023). While China's economic sanctions targeted a wide range of industries, including consumer goods, retail, tourism, and entertainment, they also indirectly affected the automotive and electronics industries. For example, Samsung's smartphones topped the Chinese market in 2013 with a 20 percent share. However, since 2016, its market share has fallen to 1 percent as of the first quarter of 2023.¹⁸

Samsung's market share has dropped so dramatically for two reasons. In 2013, its smartphones held a market share of more than 20 percent. However, Chinese smartphone manufacturers quickly eroded this market share by leveraging their price competitiveness. Consequently, Samsung's market share dropped to 8.3 percent in the first quarter of 2016. China's economic sanctions against Korea following the Korean Government's decision to deploy the THAAD system further accelerated this decline. Although smartphones were not included in the Chinese Government's sanctions, they triggered patriotic consumption among Chinese consumers, resulting in a significant decrease in Samsung's market share. Samsung's market share, which was 8.3 percent in the first quarter of 2016, dropped rapidly after the Korean Government's decision to deploy THAAD, reaching only 2.6 percent in the first quarter of 2017.¹⁹ As of 2023, Samsung's market share in China will be the lowest in the world at 1.8 percent, although its smartphones will hold the top market share in 95 countries.²⁰ Given that Samsung's global market share was 22 percent during the same period, its continuous decline demonstrates the ongoing impact of China's economic sanctions on Korea's core high-tech industries. Companies with China-centric supply chains have been forced to diversify their supply chains to other countries such as Southeast Asia.

Second, Japan removed Korea from its whitelist in 2019, restricting the export of key materials for semiconductor manufacturing to Korea. Japan's economic coercion was instrumental in getting Korea to recognize the vulnerability of its supply chain to key high-tech industries. To maximize the effectiveness of economic coercion on Korea and minimize the impact on its economy, Japan took a different approach than it did in previous trade disputes. It strategically selected items that did not have a large volume of exports to Korea, but had a large impact on Korea's key industries, reflecting Korea's

¹⁸“Global Smartphone Shipments Market Data (Q3 2021 – Q2 2023).” (2023). Counterpoint. May 9. <<https://www.counterpointresearch.com/ko/global-smartphone-share/>>.

¹⁹“Chinese Smartphone Market: 2016 and 2017 overview.” (2017). Counterpoint. <<https://www.counterpointresearch.com/insights/chinese-smartphone-market-2016-and-20-overview/>>.

²⁰“Which Mobile Brand Has the Biggest Market Share in Every Country?” (2023). ElectronicsHub. July 27. <<https://www.electronicshub.org/which-mobile-brand-has-the-biggest-market-share-in-every-country/>>.

Table 1. Structural vulnerability of Korea

	Korea		The US		Japan	
	Intermediate Goods	Total	Intermediate Goods	Total	Intermediate Goods	Total
Trade Dependence on China	23.9	25.1	12.9	21.4	23.0	32.8
No of Items	366	653	86	281	268	598
Vulnerable Items (%)	17.5	22.8	10.3	43.6	13.8	37.7

Source: Kim, Kim, and Kim (2021).

high dependence on Japan. This is a classic case of weaponized interdependence, as it has the potential to cripple supply chains in Korea's high-tech industries. Specifically, Japan targeted polyimide, photoresist, and hydrogen fluoride, which are essential for semiconductor production, and on which Korea was dependent. In 2019, Korea's hydrogen fluoride imports from Japan were valued at \$36.3 million, accounting for only 0.001 percent of Korea's total imports from Japan in 2019. Although this was a small amount, Korea had to diversify its imports because of concerns about potential disruptions to the semiconductor supply chain.²¹

This is why the Korean Government has pursued a techno-economic statecraft focused on mitigating vulnerabilities in the supply chain. Supply chain analysis generally assesses high import dependence and trade imbalances as vulnerability indicators. In Korea, key intermediate and capital goods such as electronics, chemicals, and base metals are highly vulnerable.²² These items are concentrated in China and Japan. As China has emerged as a hub within regional value chains, Korea's dependence on China has steadily increased in terms of its imports of intermediate goods. According to an analysis by a government-funded research institute, 604 of the 1,008 items in which Korea has structural vulnerabilities are highly dependent on China.²³ Korea's dependence on China for the intermediate goods essential to its core industries is higher than that of the US and Japan. In addition, those with more than 70 percent import dependence on China are categorized as strategically vulnerable.²⁴ Based on these criteria, the number of intermediate goods strategically vulnerable to China increased from 333 in 2007 to 366 in 2020. This is higher than in the US (86) and Japan (268) (see Table 1).

Against this backdrop, Korean companies have sought to diversify their supply chains, and the Korean Government has provided supportive measures. A diversification strategy differs from a reactive strategy to economic coercion in that it focuses on a proactive response to supply chain disruptions. A survey conducted by the Korea Chamber of Commerce and Industry (KCCI) on the "supply chain perception of battery, biotech, semiconductors manufacturers" shows that 62.3 percent of companies had suffered damage from the supply chain crisis in 2022. The causes of supply chain damage are complex. Along with the global spread of COVID-19, the deepening conflict between the US and China and the prolongation of the Russia-Ukraine war have combined to affect the supply chain crisis. On a 5-point scale, deepening nationalism and protectionism, ignited by the US-China strategic competition and major powers' economic coercion (3.8 points), were cited as a substantial threat to the supply chain crisis.²⁵

This indicates that Korean companies are under increasing pressure to seek diversification. In the survey, conducted by the KCCI in 2023, approximately half of the respondents (48.3 percent) answered that they had already taken countermeasures, while another 39.0 percent of respondents said they were planning to prepare countermeasures. Measures that are actually being implemented or planned

²¹Institute for International Trade (2023).

²²Min and Lee (2022).

²³Since October 15, 2021, the Chinese government has granted customs supervision code B for 29 chemical fertilizer raw materials, including urea, to effectively control exports.

²⁴Kim, Kim, and Kim (2021).

²⁵Korean Chamber of Commerce and Industry (2023).

include diversification of procurement and sales sources (43.9 percent), strengthening technological competitiveness (23.2 percent), and expansion of product portfolios (10.3 percent).²⁶ As for the government's policy in responding to resolve supply chain insecurity, 35.3 percent of respondents cited "support for finding customers," "establishment of an ecosystem for supply chain cooperation between large and small businesses" (16.3 percent), The Ministry of Industry, Trade and Energy, (2022) and "expanding subsidies and tax credits" (14.7 percent) (*Dong-A Daily*, January 3, 2023).

The formation of techno-economic statecraft in Korea

Diversification and reshoring

The US supply chain strategy has been a catalyst for Korea to improve its supply chain vulnerability. If Korea participates in the supply chain structure formed around its US allies, it is expected to help establish a stable supply and demand system. In addition, the recent sharp decline in China's share of US imports from 30.1 percent in 2018 to 17.9 percent in 2021,²⁷ as well as the Biden Administration's reshoring policy, provides incentives for Korean companies to increase their market share in the US. Against this backdrop, Samsung Electronics and SK Hynix expanded their production facilities in the US to take advantage of these opportunities. Samsung Electronics announced its plan to build eleven new semiconductor plants in Taylor, Texas, and SK Hynix planned to build a semiconductor packaging plant in the US in 2023.²⁸ From the perspective of national strategy, it was a strategic move to align itself with the Biden Administration's China policy. From the perspective of corporate strategy, both companies expected that expansion of semiconductor production facilities in the US would help mitigate vulnerabilities by reducing dependence on the existing China-centric supply chains and increasing market share in the US.

The simultaneous pursuit of diversification and reshoring is the first pillar of Korea's techno-economic statecraft. First, its diversification is found in the number of Korean companies going abroad. A total of 27,336 overseas subsidiaries were established through foreign direct investment between 2014 and 2022. Korean companies have expanded overseas as part of their diversification strategies. Through this process, Vietnam has emerged as a major destination for diversification. Notably, Vietnam has emerged in the process of diversification away from China. This is reflected in the trend in the number of new subsidiaries established by Korean companies. In 2012, the number of Korean companies entering China and Vietnam was 741 and 213, respectively. The gap between the two countries narrowed to 737 and 545 in 2015, followed by 490 and 411 in 2018. The number of overseas subsidiaries established by Korean companies in Vietnam between 2014 and 2022 was 553, ranking second after the US (559).²⁹ During the first three quarters of 2022, the number of Korean companies established in Vietnam reached 233, surpassing China's 156.³⁰

Second, the Korean Government embarked on various measures of reshoring. The Korean Government renewed the "Act to Support the Return of Overseas Companies to Korea" ("U-Turn Act") in 2020, which aimed to facilitate companies' return to Korea. The investment plan of "U-turn" companies by year has continuously increased since 2014. The amount of investment plans by 24 "U-turn" companies in 2022 was 1,108.9 billion won, up by 43.6 percent from 2021.³¹ Compared to the number of Korean companies opening up overseas, the number of companies returning to Korea is relatively small. However, 77 percent of the companies returning to Korea are from China, indicating that they have pursued a diversification strategy away from China (see Table 2).

The semiconductor industry is a prime example of a Korean company simultaneously pursuing diversification and reshoring. As shown in Fig. 1, Samsung Electronics adopted a dual strategy of reshoring high value-added processes, including R&D, to Korea, while diversifying production

²⁶Ibid.

²⁷Bureau of Industry and Security (2021).

²⁸Hankyung Economic Daily, 24 November 2021.

²⁹MOIE (2022).

³⁰*Dong-A Daily*, 20 January 2023.

³¹MOTIE (2022).

Table 2 Reshoring in Korea

Year	No of U-turn Companies	Amount of Investment (100 Million Won)	No of Overseas Subsidiaries
2014	15	745	3,050
2015	2	52	3,221
2016	10	334	3,344
2017	4	416	3,459
2018	8	414	3,557
2019	14	3,948	4,016
2020	23	5,140	2,428
2021	26	7,724	2,330
2022	24	11,089	1,391
Total	126	29,862	26,796

Source: MOITE (2022).

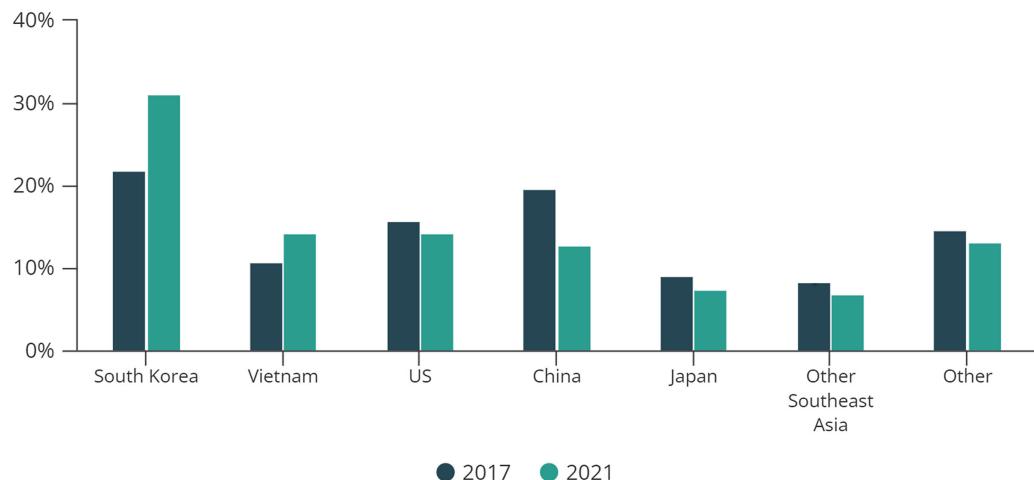


Figure 1. Samsung electronics' supply chain change.

Source: Rudnik (2022).

processes with low added value from China to Vietnam.³² In contrast, Samsung Electronics has substantially reduced its investment in China and diversified into Vietnam. As a result, the *Wall Street Journal* noted that Samsung Electronics has done the most effective job of reducing its supply chain dependence on China.³³ Samsung Electronics was able to reorganize its supply chain effectively because it started diversifying its supply chain before the US-China strategic competition intensified. Korea's supply chain restructuring strategy is closely related to cozy government-business relations. In other words, Samsung has diversified its supply chain but still recognizes the importance of China as a market.

The Pursuit of technology sovereignty

The second pillar of Korea's techno-economic statecraft is increasing technological self-sufficiency. Korea's pursuit of policies aimed at increasing its technological self-sufficiency is primarily a preemptive measure against economic coercion from China and Japan. As the US and China entered a

³²Rudnik (2022).

³³Wong (2023).

race for technological supremacy and major countries formulated strategies to increase their technological self-sufficiency, the Korean Government found it necessary to enhance technological capacity to secure technological sovereignty. In particular, the Korean Government believes increasing technological self-sufficiency is essential to mitigate its vulnerability to China and Japan.

In response to China's economic sanctions and Japan's export controls, Korea embarked on creating preemptive measures to increase its domestic production capacity. The Korean Government selected "100 Key Strategic Items" among core materials, parts, and equipment to provide policy support and increase self-sufficiency.³⁴ As evidenced by the decrease in dependence on Japan, from 30.9 percent in 2019 to 24.9 percent in 2021, the Korean Government's policy has contributed to lowering the country's dependence on Japan for materials, parts, and equipment. Korea's dependence on the Japanese Government's export-controlled items, such as hydrogen fluoride, extreme ultraviolet lithography (EUV), and fluorinated polyimides, has sharply decreased. Korea's dependence on imports from Japan for materials, parts, and equipment subject to export restrictions from the Japanese Government declined from 21.3 percent in 2013 to 15.0 percent in 2022.³⁵ Specifically, Korea's reliance on Japan for photoresist decreased from 93.2 percent in 2018 to 77.4 percent in 2022, while hydrogen fluoride's dependency on Japan dropped from 41.9 percent to 7.7 percent during the same timeframe. The dependence of polyimide on Japan also decreased from 44.7 percent to 33.3 percent.³⁶

The spread of industrial policies in advanced countries that aim to improve indigenous capabilities in high technology and expand domestic manufacturing capacity in high-tech industries has prompted the Korean Government to implement policy measures (KOTRA, 2022). Triggered by the US CHIPS and Science Act, the EU enacted the EU CHIPS Act, which aims to raise €43 billion in funding to increase the EU's share of semiconductor production to 20 percent (The EU Commission 2022b).³⁷ The moves by the US and EU, in turn, set off a chain reaction from the Japanese Government, which provided a ¥470 billion subsidy to TSMC and established Rapidus to develop 2-nanometer semiconductors and begin construction of a factory in Chitose City in April 2023.³⁸

Recognizing that ensuring the competitiveness of core high technologies is essential, the Korean Government designated "10 National Strategic Essential Technologies" in December 2021.³⁹ Considering that strengthening its technological sovereignty is of strategic importance, the Korean Government aims to achieve 90 percent or more of the level of the most advanced countries for these 10 national strategic essential technologies. The government invested 3.3 trillion won in R&D in high technologies, including AI, 5G/6G, advanced bio, quantum, space and aviation, semiconductors and displays, secondary batteries, hydrogen, cybersecurity, advanced robotics, and manufacturing.⁴⁰

In October 2022, the Korean Government identified "12 National Strategic Technologies" based on three criteria: supply chains and trade, new industries, and foreign affairs and security.⁴¹ The Presidential Office emphasized that the twelve strategic technologies, if promoted as planned, would help Korea develop into a top-five science and technology power and contribute to its sustainable growth and economic security in the era of technological competition.⁴² The government increased the R&D budget to 25 trillion won earmarked for the 12 technologies.

Institutional and governance innovation

Third, the Korean Government pushed to strengthen the legal foundation of supply chain stability. To prevent and preempt the recurrence of economic coercion, the Korean Government enacted legislative measures to strengthen the competitiveness of its materials, components, and equipment.

³⁴Korea Policy Briefing (2021).

³⁵Hyundai Research Institute (2023).

³⁶"Japan's semiconductor export restrictions lifted... However, it is nothingburger as South Korea mostly localized." (2023).

³⁷The EU Commission (2022a).

³⁸Rapidus (2023).

³⁹KDI (2022).

⁴⁰The Ministry of Science and ICT (2022).

⁴¹The Ministry of Science and ICT (2022).

⁴²The Office of the Secretary of Science and Technology (2022).

The Korean Government revised the “Special Measures Act to Foster Companies Specializing in Materials and Parts” to “Act on Special Measures for Strengthening the Competitiveness of the Materials, Parts, and Equipment Industries and Stabilizing the Supply Chain.” The Act designates “items for supply chain stabilization” that are essential and impose financial and tax incentives on these items to strengthen the restructuring and response capability of the supply chain. The purpose of the Act is to improve supply chain risk management capabilities, such as diversification of import sources and increasing private stockpiling, while reinforcing the function of early warning analysis by designating supply chain centers.⁴³ Moreover, the new Act is significant in that it shifts the paradigm from fostering specific companies to strengthening industry-oriented competitiveness by expanding the scope of the policy from materials and components to materials, components, and equipment. This enables selection and development of leading companies specializing in materials, components, and equipment, and support for mergers and acquisitions as needed.⁴⁴

Subsequently, the Korean Government enacted the “Basic Act on Support for Supply Chain Stabilization” to promote capacity building in response to supply chain restructuring. The Korean Government also proposed the “Framework Act on Supply Chain” in October 2022, which stipulates general policy measures related to supply chain stability, such as identifying supply chain threats, stabilizing the supply chain, and establishing an emergency response system in case of supply chain disruption. The Act is the first to institutionalize a nationwide supply chain stabilization and crisis management system, establishing the Presidential Committee on Supply Chain Stabilization as a supply chain management control tower, and creating a legal basis and fund to support the private sector’s supply chain stabilization efforts.⁴⁵

Realizing that collaboration with private companies is important to strengthen supply chain resilience and improve early warning capabilities, the Korean Government promoted governance reforms focused on strengthening public-private partnerships. In March 2022, the Korean Government reformed the public-private cooperation in the supply chain by expanding the number of participating institutions from 12 to 29 (see Table 3). At the core of the transformation were significantly expanding number of private companies, public companies, and think tanks participating in supply chain management committees; improving ability to collect and analyze supply chain-related information; and strengthening collaboration for early warnings.

Techno-economic statecraft and industrial policy: domestic-external nexus and the case of the semiconductor industry

Supply chain vulnerability of the Korean semiconductor industry

Korea’s share of the global semiconductor market is approximately 20 percent, and its market share in memory is a staggering 60 percent. However, Korea relies on imports for a significant portion of the materials, components, and equipment required to produce semiconductors. For example, it mainly imports finished semiconductor products from Taiwan and China. In 2021, imports from Taiwan accounted for 43.5 percent of system semiconductors, and 76.1 percent of memory semiconductor imports came from China. The high dependence on imports of memory semiconductors from China is attributable to the increased production volume of the Samsung Electronics and SK Hynix factories in China. In addition, semiconductor equipment was mainly imported from the US (26.9 percent), the Netherlands (26.3 percent), and Japan (24.3 percent). Korea is almost entirely dependent on the Netherlands for EUV equipment imports, with 84 percent of its ion implanters imported from the US. Its semiconductor materials are highly dependent on Japan (40.1 percent) and China (17.1 percent) (see Table 4).⁴⁶

⁴³The Ministry of Industry, Trade and Energy (2019).

⁴⁴Ibid.

⁴⁵The Ministry of Finance (2022).

⁴⁶Taiwan’s imports of semiconductor materials were concentrated in Japan (45.7%) and China (15.8%).

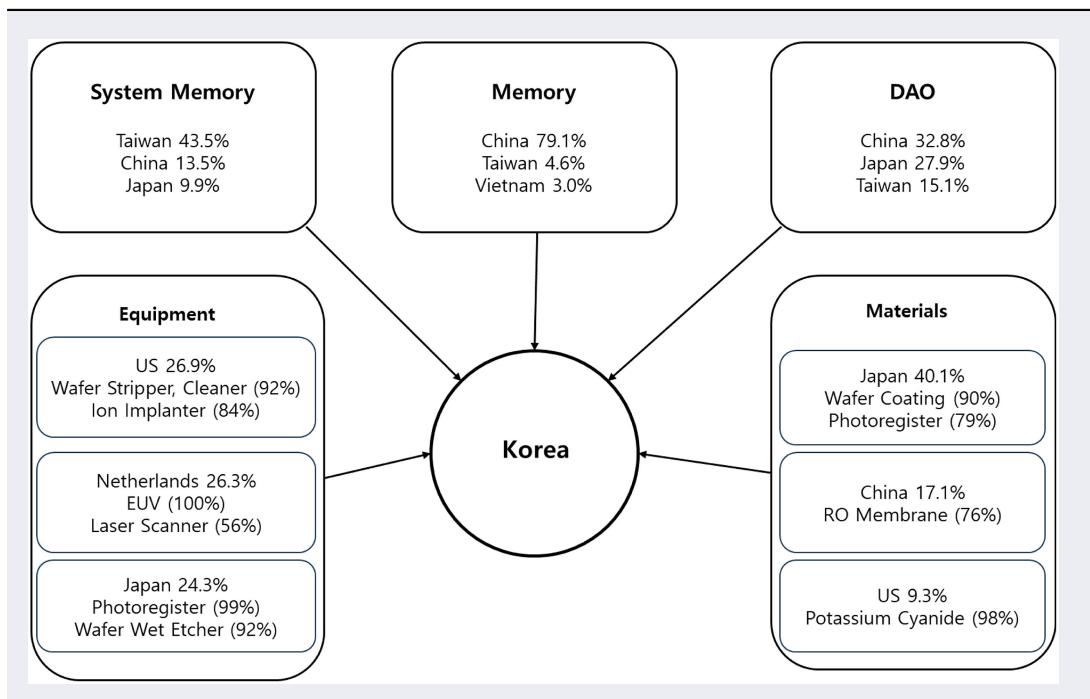
Table 3. Changes in domestic governance to create supply chain network

	Old	New
Gov't	Ministry of Trade, Industry, and Energy	Ministry of Trade, Industry, and Energy ^t
	Supply and Demand Response Support Center for Materials, Parts and Equipment	Supply and Demand Response Support Center for Materials, Parts, and Equipment
Industry	Korean Association of Machinery Industry	Korean Association of Machinery Industry
	Korean Semiconductor Industry Association	Korean Semiconductor Industry Association
	Korea Display Industry	Korea Display Industry
	Korean Automobile Manufacturing Association	Korean Automobile Manufacturing Association,
	Korea Iron and Steel Association	Korea Iron and Steel Association
		Korea Nonferrous Metal Association
		Korea Association of Robot Industry
		Korea Auto Industries Coop Association
		Korean Electronics Association
		Korean SMEs and Startups Agency
		Korea Bio Association
		Korea Textile Industry Association
		Korea Battery Industry Association
		Korea Aerospace Industries Association
		Korea Fine Chemistry Industry Association
Trade	Korea International Trade Association	Korea International Trade Association
	Korea Trade-Investment Promotion Agency	Korea Trade-Investment Promotion Agency
	Korea Security Agency of Trade and Industry	Korea Security Agency of Trade and Industry
		Korea Importers Association
Energy		Korea Gas Corporation
		Korean Mine Rehabilitation and Mineral Resources Association
		Korea National Oil Corporation
Research Institute	Institute for International Trade	Institute for International Trade
		Korea Institute for International Economic Policy
		Korea Institute for Industrial Economics and Trade
		Korea Energy and Economy Institute

Source: KITA (2022).

High dependence on imports has created structural vulnerability in the Korean semiconductor supply chain. The proportion of items with import dependence of over 90 percent is 18.2 percent in the Korean semiconductor industry, which is higher than that in Taiwan (16.7 percent), the US (7.8 percent), China (0 percent), and Japan (0 percent). In 2021, out of 80 semiconductor equipment items with an import amount of more than \$10,000, 30 items (37.5 percent) were 90 percent dependent or higher on imports from a few countries (International Trade Institute 2022). These figures are among the highest compared to other semiconductor-producing countries, indicating the vulnerability of the supply chain in the Korean semiconductor industry.

Table 4. Korean semiconductor industry's import dependence



Source: KITA (2021).

To remedy this structural weakness, the Korean Government strengthened the semiconductor supply chain. In addition, it responded quickly to policy moves by the US, the EU, and Japan to provide massive subsidies to expand domestic production capacity in the semiconductor industry. The Biden Administration's expansion of semiconductor export controls to China also contributed to the Korean Government's decision to strengthen the resilience of its supply chain. China is Korea's largest export destination for semiconductor-related products, including systems (32.5 percent), memory (43.6 percent), equipment (54.6 percent), and materials (44.7 percent). The Biden Administration's expansion of the scope of semiconductor export controls to China forced the Korean Government to restructure its semiconductor supply chain. To prepare for China's rapidly growing demand for semiconductors, Samsung Electronics and SK Hynix have built large-scale advanced semiconductor production facilities in China. The two companies invested more than KRW 33 trillion and KRW 35 trillion, respectively, in China. As a result, Samsung produces 40 percent of its NAND flash, and SK Hynix produces 40 percent of its D-RAM and 20 percent of its NAND, in China.

However, a provision in the CHIPS and Science Act that prohibits US government-subsidized companies from investing in China for the next 10 years has created uncertainty for Samsung and SK Hynix in maintaining their semiconductor production facilities in China.⁴⁷ Specifically, if Samsung Electronics and SK Hynix received investment subsidies under the CHIPS Act, they would be prohibited from expanding their semiconductor production capacity in China by more than 5 percent over the next 10 years.⁴⁸ The Biden Administration has granted Samsung and SK Hynix a one-year moratorium; however, if the moratorium is not extended, Samsung and SK Hynix could be forced to stop investing in their existing facilities in China altogether. The Biden Administration's steady escalation of semiconductor export controls to China has dramatically increased the level of uncertainty for Samsung and SK Hynix.

⁴⁷Chosun Daily, 8 March 2023.

⁴⁸Yonhap News, 21 March 2023.

Moreover, the concern that China may impose economic sanctions on the Korean semiconductor industry if Korea increases its level of policy alignment with the US is one of the factors that prompted the Korean Government to move forward with its semiconductor industry policy. If China imposes retaliatory economic sanctions, such as restricting Korea's semiconductor imports, exports could be hit hard; therefore, preparing countermeasures in advance is necessary to minimize the risk. Because of this, the government enacted the K-CHIPS Act.

The political dynamics of the Korean CHIPS act

The first round: interplay the ruling party, opposition party, and the MOSF

Korea's competitors, such as the US, China, Japan, and Taiwan, are aggressively attracting semiconductor investments by introducing various incentives, such as direct subsidies and tax benefits. For example, the US CHIPS and Science Act provides a 25 percent tax credit, regardless of the size of the company, if it builds a semiconductor factory in the US. The CHIPS and Science Act provides \$52.7 billion in grants for semiconductor R&D and manufacturing and a 25 percent tax credit for the cost of building a semiconductor factory.⁴⁹ In response to increased US regulation aimed at slowing technological progress, the Chinese Government is reportedly preparing a ¥1 trillion (\$145.3 billion) package to support the semiconductor industry.⁵⁰ The Taiwanese Government also amended the law to raise the R&D tax credit rate for semiconductor companies from 15 to 25 percent.⁵¹

The proliferation of other countries' industrial policies was a major factor in the Korean Government's pushing for the K-CHIPS Act. Although Korean chipmakers were expected to benefit from the US-China technology competition, the shaky position of Korean companies in the US market has also raised the need for government support for the semiconductor industry. In fact, the performance of Korean chip companies has been modest, while their main competitors have been rapidly increasing their market share in the US. The US market share of Taiwanese and Vietnamese chipmakers increased from 9.7 to 17.4 percent and from 2.6 to 9.1 percent, respectively. In contrast, the share of Korean companies increased by only 2.1 percentage points, from 11.2 percent in 2018 to 13.2 percent in 2021, as a result of the decoupling between the US and China.⁵² The Korean Government estimated that TSMC, Samsung's main competitor, could rapidly expand its market share in the United States with Taiwanese Government support.

In this context, the ruling People's Power Party sought to introduce the Tax Exception Restriction Act, known as the K-CHIPS Act, to reduce taxes in the semiconductor industry, believing this was the most important part of the policy promoting the semiconductor industry. The ruling party argued that "significant tax support is needed for national strategic industries" and asked to increase the tax deduction rate for investment in semiconductor equipment to 20 percent. First, the ruling party pushed for a revision of the bill to increase the tax credit for semiconductor equipment investment by large, medium, and small enterprises to 20, 25, and 30 percent, respectively, by 2030.

The opposition used the strategy of delaying the review of the semiconductor bill because it would provide massive preferential treatment to chaebols. Instead, the opposition proposed tax credits of 10 and 15 percent for large and medium-sized businesses, respectively.⁵³ Unable to pass the bill without the cooperation of the opposition, which holds a majority in Congress, the ruling party was forced to seek a compromise that would lower the level of tax loopholes.

The Ministry of Strategy and Finance (MOSF) was another important actor that significantly affected the enactment of the K-CHIPS Act. The MOSF was concerned about the negative fiscal impact of the tax incentives provided in the K-CHIPS Act. From the outset, the MOSF was outspoken about its concerns about tax deductions for semiconductor investments. The MOSF argued that if the ruling party's plan is followed, tax revenue in 2024, after corporate tax is abolished in 2023, will decrease by

⁴⁹The White House (2022).

⁵⁰"China gives chipmakers easier subsidy access to help guide industry recovery" (2023).

⁵¹Robinson (2023).

⁵²International Trade Institute (2022).

⁵³Maeil Economic Daily, 24 December 2022.

nearly 2.7 trillion won compared with the government's.⁵⁴ Regarding the original plan proposed by the ruling party, the MOSF expressed a negative position, saying that if the ruling party's bill (20 percent of large companies) were passed, corporate tax revenue would decrease by KRW 2.697 trillion won by 2024.⁵⁵

In the face of opposition because of the MOSF's concerns about fiscal soundness, the ruling party had to retreat from its original plan (10, 15, and 30 percent tax credits, respectively) and only increase the deduction for large companies by two percentage points.⁵⁶ Finally, when the K-CHIPS bill was debated in the National Assembly, the tax deduction rate in the ruling party's bill was drastically reduced to 8 percent, even lower than that of the opposition Democratic Party (10 percent). At the plenary session on December 23, the National Assembly voted on an amendment to the Special Tax Restriction Act that would raise the tax credit rate for large companies investing in semiconductor equipment to 8 percent from the current 6 percent. This was a significant step back from the original proposal to "expand the tax credit rate to 20 percent."⁵⁷

On the day of the bill's passage, the chairman of the ruling party's special committee, Yang Hyang-ja, an independent lawmaker, criticized the MOSF, lamenting that "despite the president's campaign promise to provide a range of support to help the country achieve its goal of becoming a semiconductor superpower, the MOSF lowered the tax credit rate for semiconductor equipment investment to 8 percent." Yoo Hwan-ik, head of the industrial division of the Federation of Korean Industries, also pointed out that "the government (i.e., the MOSF) seems to have been buried in the short-term tax revenue reduction effect."⁵⁸

The MOSF responded to the criticism by arguing that the (Korean) government's tax support is at a higher level than its competitors, such as Taiwan. The MOSF's argument was that the Taiwanese Government's tax deduction rate was 5 percent, and in the area where the Taiwanese Government applied a 25 percent deduction, Korea already applied 40 percent. The MOSF further argued that, while the 8 percent tax deduction was not low by any means, comparing it with the US CHIPS and Science Act was not reasonable. It emphasized that the 25 percent tax incentive provided by the US CHIPS and Science Act came with very strict conditions, including restrictions on exports to unfriendly countries such as China.⁵⁹

The MOSF also took advantage of the opposition party's argument that the tax rate deductions gave preferential treatment to large corporations. The opposition party argued that the semiconductor tax credit was *de facto* special support for Samsung Electronics and SK Hynix, earning 32 and 15 trillion won, respectively, in 2021. The fact that the tax credit rates for medium-sized companies and SMEs have been maintained at 8 percent and 16 percent, respectively, shows that the Ministry of Strategy and Finance has used the opposition party's argument.

The second round: the semiconductor industry's concerns and the presidential office intervention

The law heightened concerns in the broader semiconductor community that Korea could lose out to Taiwan in the competition for semiconductor dominance in the US market.⁶⁰ On December 25, 2022, the semiconductor industry, businesses, and academia joined forces to criticize the National Assembly's passage of the amendment to the Special Tax Restriction Act. Park Jae-geun, president of the Semiconductor Display Society, said, "Korea has a low tax credit rate, not to mention subsidies. Once the market is lost, there is no going back." "The future of Korean semiconductors is doomed," lamented a senior private member of the Special Committee on Strengthening the Competitiveness of the Semiconductor Industry, urging a review of the K-CHIPS law. In addition, four major academic

⁵⁴Yonhap News, 2 January 2023.

⁵⁵Dong-A Daily, 30 December 2022.

⁵⁶Seoul Economic Daily, 23 December 2022.

⁵⁷Dong-A Daily, 30 December 2022.

⁵⁸Joongang Daily, 25 December 2022.

⁵⁹The Ministry of Strategy and Finance (2022)

⁶⁰Chosun Daily, 28 December 2022.

associations in the field of semiconductor technology drafted a statement criticizing the K-CHIPS Act. In the statement, they said, “The semiconductor industry has recently restructured its supply chain for security reasons. As the US, European, Japanese, Chinese, and Taiwanese Governments are increasingly supporting private companies in protecting and promoting their semiconductor industries, a fundamental review by the government and political parties is absolutely necessary.”⁶¹

The tax credit rate for semiconductor investments passed by the National Assembly was 8 percent, which was lower than expected. The intervention was initiated by the Presidential Office. President Yoon Seok-yeol said, “Because strategic technologies such as semiconductors are a national security asset and a core technology for our industry, I urge the MOSF to consult with related ministries and actively find ways to further expand tax support for semiconductors.”⁶²

The direct intervention forced the MOSF to change its position. Two days after President Yoon Seok-yeol expressed his opinion, MOSF Minister Choo Kyung-ho responded, “The ministry will announce a plan within a week to increase the tax deduction rate for national strategic technologies such as semiconductors to more than 10 percent.”⁶³ A MOSF official stated, “The MOSF will submit an amendment to the Special Case Restriction Act.” The amendment was expected to increase the deduction rate for large companies to 10–20 percent.

The president’s intervention spurred the ruling party to further increase tax incentives. The ruling party’s Special Committee on Semiconductors demanded 20 percent for large companies, 25 percent for medium-sized companies, and 30 percent for SMEs. In response, the MOSF announced in the 2023 Economic Policy Direction that it would deduct an additional 10 percent of the increase in investment from the average of the previous three years. Given that the current deduction rate for the increase in investment was 4 percent, it more than doubled by six percentage points”.⁶⁴

The case of the K-CHIPS Act sheds light on how the Korean government has maneuvered to shape the domestic political process to promote techno-economic statecraft. It shows that the interplay between political, bureaucratic, and civil actors with different preferences was at the heart of the techno-economic statecraft. The US and China, as well as the EU, Japan, and Taiwan, have competitively introduced policies to protect and promote the semiconductor industry. Such moves by major countries encouraged the Korean government to promote support for the semiconductor industry.

Compared to other countries, the Korean government’s semiconductor industry policies are distinctive. In contrast to the US, the EU, and Japan, which prioritized expanding the domestic production capacity of semiconductors, Korea focused on mitigating the vulnerabilities of the semiconductor industry supply chain rather than expanding production capacity. The Korean government thought the supply chain of the semiconductor industry had structural weaknesses due to its high dependence on foreign imports. In the case of semiconductor materials, Korea is highly dependent on Japan, with 12 items accounting for 80.9 percent of total imports.⁶⁵ To address these issues, the Korean government has pursued an industrial policy focused on mitigating the vulnerability of the semiconductor supply chain.

In addition, the scope of Korea’s semiconductor industry policy is relatively narrow. While other countries have pursued various policies such as subsidies, tax credits, human resource development, and international cooperation to support the semiconductor industry, Korea’s semiconductor industry policy largely focuses on tax credits. Significant changes have occurred in the policy implementation process in the semiconductor industry, such as tax credits being determined at a level lower than that planned by the ruling party. In this regard, the interests of political parties wary of supporting chaebols and that of the MOSF, concerned with fiscal soundness, coincided. The opposition party highlighted that extending tax benefits was tantamount to providing preferential treatment to chaebols, creating a domestic political environment that made providing massive support difficult. The MOSF also took a

⁶¹*Joongang Daily*, 25 December 2022.

⁶²“President Yoon ‘Considers expanding tax support for strategic industries such as semiconductors’.” (2022).

⁶³*Donga-A Daily*, 2 January 2023.

⁶⁴*Yonhap News*, 21 March 2023.

⁶⁵Chung (2021).

passive stance on semiconductor industry policy, fearing that a large tax reduction would result in loss of tax revenue.

Finally, the Korean government overcame this unfavorable domestic political setback and enacted the K-CHIPS Act, thanks to a widely shared geopolitical consideration that the declining competitiveness of the semiconductor industry could affect the country's survival.⁶⁶ The concerns and opposition of semiconductor-related associations and experts provided strategic room for the government and ruling party to maneuver. They argued that the future of the Korean semiconductor industry would be bleak if the country did not respond quickly to the semiconductor industrial policies of other countries. These concerns invoked the president's policy intervention, resulting in a change that strengthened semiconductor industry policy.

The geopolitical consideration of strengthening the competitiveness of the semiconductor industry was evident in President Yoon's perception. President Yoon stressed that "the semiconductor competition is not just a competition, it is an industrial war, and it is a total war."⁶⁷ The Korean government passed the K-CHIPS Act in April 2023. It includes expanding the investment tax credit rate for secondary batteries, vaccines, displays, hydrogen, electric vehicles, and autonomous vehicles, with support for the semiconductor sector being key.

In March 2023, the Korean government announced plans to build the world's largest semiconductor cluster in Yongin City. Private companies responded immediately to government initiatives. For example, Samsung Electronics invested a total of 300 trillion won over the next 20 years to build five semiconductor manufacturing plants. The Korean government expects the cluster to attract 150 material, component, and fabless companies. In particular, to overcome the weakness of the semiconductor supply chain, the cluster will attract a number of Japanese material, component, and equipment companies, indicating that Korea is approaching the reshoring of the semiconductor industry from a techno-economic statecraft perspective. Attracting foreign companies to Korea is expected to reduce the vulnerability of the Korean semiconductor industry's supply chain.

Conclusions

Thus far, I have examined the way in which techno-economic statecraft has emerged in Korea. As economic-security linkages have become dominant because of the US-China strategic competition and the global spread of the pandemic, Korea has attempted to shift from a reactive economic statecraft to a proactive techno-economic statecraft. Korea's techno-economic statecraft includes two elements: a response to competition for technological supremacy at the external level, and support for key high-tech industries at the domestic level. First, Korea was able to make the transition to techno-economic statecraft because it possessed high-tech capabilities and occupied a key position in the supply chain of key high-tech industries. Meanwhile, compared with other countries, Korea has not only serious vulnerabilities in its overall industrial structure but also structural vulnerabilities, even in high-tech industries where it has competitive advantages. Korea's pursuit of techno-economic statecraft emerged as a remedy to the vulnerability of the high-tech industries.

Second, protectionism and the pursuit of technological sovereignty by major countries were an initial impetus for the rise of techno-economic statecraft in Korea. However, as conflicts developed over how to support key high-tech industries at the domestic level, Korea's techno-economic statecraft went through significant changes in the implementation phase. To respond to growing uncertainties, Korea has promoted policies such as securing technological sovereignty, diversification, and reshoring, and has also embarked on domestic governance reforms to strengthen public-private partnerships. Systematic analysis of whether the techno-economic statecraft that Korea pursued in various areas produced the expected results is necessary.

Although reshoring has increased compared to the past, it has been slow owing to various domestic regulations, and the number of returning companies is remarkably small compared to that of

⁶⁶Thurbon and Weiss (2021).

⁶⁷Korea Policy Briefing (2023).

companies going overseas. In addition, some high-tech industries have diversified from China to Vietnam, but diversification of core processes has not yet been achieved. Faced with Japan's export controls, the Korean government pursued diversification of materials, parts, and equipment, and succeeded in reducing its dependence on Japan for some items.⁶⁸ In 2022, Korea's import dependence on Japan for materials, components, and equipment was 15.1 percent, the lowest since 2012.⁶⁹ Meanwhile, Korea's efforts produced unintended consequence of increasing dependence on imports from China for certain items, which is inconsistent with the overall strategic posture of diversifying away from China.

Third, effort has been lacking to incorporate corporate interests, which are key players in the implementation stage, into techno-economic statecraft (Ferguson, Lim and Herscovitch, 2023). Pursuing techno-economic statecraft in terms of national strategy is not an option, but a necessity, in the external environment where countries competitively pursue their own national interests. In this respect, the role of the state as the main driver of techno-economic statecraft cannot be overemphasized, and the government should be wary of the possibility of being captured by the private sector in promoting techno-economic statecraft. However, the systematic integration of corporate interests, which are key actors in the implementation phase, has a profound impact on the success or failure of techno-economic statecraft (Moschella, 2023).

Fourth, the case of the K-CHIPS Act is a good example that showcases the domestic dimension of techno-economic statecraft. The semiconductor industrial policy in Korea demonstrates that techno-economic statecraft is not just a response to changes in the external environment, but also the outcome of interactions between the government, private firms, and the parliament. The Korean government's semiconductor industrial policy was driven by the increasing need to respond to US and EU industrial policies. However, unlike the US and EU CHIPS Acts, Korea's semiconductor industrial policy did not take the form of a subsidy but a tax credit. It was a compromise between semiconductor companies that needed government support to improve their competitiveness, the MOSF that needed to maintain its financial soundness, and the National Assembly that attempted to minimize preferential support for large companies.

The case of the semiconductor industry has theoretical implications for other high-technology industries in that the interaction among various stakeholders influences the specific form of support. In this regard, the government's ability to balance the interests of business and the National Assembly will shape the nature of techno-economic statecraft in other high-technology industries as well. If the government is able to incorporate the interests of the private sector and the political calculus of politicians into the techno-economic statecraft, it is likely to create a basis for domestic consensus.

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⁶⁸Hyundai Research Institute (2023).

⁶⁹Ministry of Industry, Trade and Energy (2022).

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