

STATE SUPPORT AND COMPETITIVENESS OF INDUSTRY: CASE OF SHIPBUILDING INDUSTRY IN KOREA.¹

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The competitive advantage of an industry includes access to new technology, availability of highly skilled labour, geographic location, capital outlay, and a business-friendly environment. In the development process, the government plays a significant role in creating a favourable environment to encourage companies to grow. In many cases of the East Asian countries, particularly Japan, South Korea and China, state support is one of the major forces in fostering the technology intensive industries. The East Asian development experiences are totally different from those of the Western nations; a large number of great Western companies were born under the individualistic free market system, but many giant companies in Japan and South Korea grew big under the state-led economic system. For the East Asian countries, particularly China, Japan and South Korea, state support is a principal tool of economic management. With soft loans from the state banks, favourable tax deductions, and various types of incentives from the government, industrialists in the East Asia enjoy a plethora of advantages and benefits. One very good example is the East Asian shipbuilders, which have achieved remarkable success by dominating the world shipbuilding market. Under the state-led development strategy, the world shipbuilding centre was shifted from the West to the East, where South Korea, China and Japan accounting for more than 85% of the global production today. There are many reasons behind this success story, but this study focus on the government's role, and examine how the state support has helped the development of the shipbuilding industry, with South Korea as an example.

Keywords: South Korea, shipbuilding, state support

INTRODUCTION

Industrial developments in the East Asian countries are marked by considerable government intervention. The state development model advocates that resources can be allocated more efficiently and effectively in achieving faster economic growth, and this belief justifies the aggressive support provided by the government. Joo and his colleagues suggests that government support could enhance the firm's environmental and technological innovation capabilities.² This state development model has been proven effective in the case of industrial development

¹ Part of this research was supported by the Korea Foundation Fellowship program in 2019.

² Hye-Young Joo, Yong Won Seo and Hokey Min, "Examining the effects of government intervention on the firm's environmental and technological innovation capabilities and export performance," *International Journal of Production Research*, Vol. 56, No. 3, pp. 1-22. February 2018.

experiences of Japan, South Korea and China. Particularly, the Chinese way of attaining industrial development success today has stirred debates on the role of the government. The scale and speed of the Chinese technological expansion have generated serious concerns from the West, particularly the U.S, which has criticized China of using unfair business practices with extensive state subsidies. The Chinese state-led policies clash with the Western capitalist free market system. Different national ideologies have created conflicts between the two superpowers in the race of becoming the super technology nation. From China's perspective, extensive industrial subsidies are necessary to break through the barriers of low technology and labour intensive manufacturing in the country. Tax incentives, grants and subsidies serve as a catalyst to boost domestic technology innovation. To some extent, China follows the blueprints of Japan and South Korea, both of which have successfully built up their strong industrial foundations with state-capitalist strategies. By targeting certain strategic industries, interests of the private sector are aligned with the national aspiration of building a prosperous nation. In other words, the government is using a shortcut to help local companies venture into the international market, become globally competitive, and create more jobs in the domestic market.

Particularly, the post-war success of the Japanese economy and technology growth are extremely impressive under the model of business-government cooperation. The Japanese government has been facilitating the growth of industries by channeling large amounts of state funds into targeted fields through the grants of loans by the government-owned financial institutions and government-linked investment programmes.³ All these government assistance and funding directly solve the problem of capital needs of the private firms. Various tax measures and incentives have also been adopted to encourage investments in strategic industries. By giving favourable tax treatment and low-interest loans, Japan and Korea achieved remarkable economic success and business growth in the 1970s, which laid a solid base for many industries in the two countries today. Under the umbrella of the state-capitalist strategies, business group leaders work together with the government to fulfill national ambitions, and at the same time, the private sector's business interests are well taken care of.⁴ It is totally different from the Western "self-interest first" approach, which also works well within the individualistic free market system. Nonetheless, the East Asian economies such as those of Japan, Korea and China have taken a different development approach. Many studies have demonstrated that effective government interventions in the market worked well during the early development periods of Japan, and later in South Korea and China too.⁵ In many industries such as those of automobiles, petrochemicals, electronic and electrical appliances, shipbuilding and manufacturing of steels, Japan and Korea have successfully replaced the Western industrialists to be the world major players in the post-World War period.

Porter states that the government's proper role is acting as a catalyst; the main function is to encourage or even to push firms to raise their aspirations and move to higher levels of competitive performance.⁶ Porter also says that successful government policies are those that create an environment in which companies can gain a competitive advantage and accelerate the pace of innovation.⁷ According to Loriaux, in a developmental state, it is a moral ambition to use state-

³ Masao Sakisaka, *Development of the Japanese Economy after World War II*, Gaimushō: Ministry of Foreign Affairs, 1963.

⁴ Peter F. Drucker, "Behind Japan's Success," *Harvard Business Review*, Jan 1981.

⁵ Noland, Marcus, and Howard Pack. *Industrial Policy in an Era of Globalization: Lessons from Asia*. Washington, D.C.: Institute for International Economics. 2003.

⁶ Michael Porter, "The Competitive Advantage of Nation," *Harvard Business Review*, March – April 1990.

⁷ Ibid.

interventionist forces in guiding investments in such ways that help develop the economy.⁸ Through the implementation of effective industrial policies, Japan's development experience has become the role model of other East Asian economies. From the 1960s to 1980s, products churned out by the Japanese industries penetrated almost the entire world market. All sorts of industries, such as those related to steel, oil refining, petrochemicals, cars, shipbuilding, various industrial and electronic manufacturing services, were successfully built up in Japan. The enormous role of the Japanese government is closely associated with the highly effective industrial development process of the nation; it certainly cannot be separated from the success of the Japanese private enterprises. Government intervention is not limited to the direct involvement of a government in the economy, but also includes active supports for the local industries to grow. A study of Tomlinson and Kunio points out that, some of the most powerful weapons are the provision of subsidies and tax incentives; protection against unfair competition from foreign companies, administrative support and so forth.⁹

In the initial development process of Korea, the Korean government played a significant role as well. As an emerging economy with a limited size of domestic market, the Korean government subsidised the exporting firms to achieve a higher volume of exports in the 1960s to 1970s. Boosting the exports and GDP growth was the core policy of the Korean economic plan. To encourage the Korean domestic firms to venture into the international market, tax incentives and financial support were pivotal tools. One of the effective measures to energise the private business firms was providing subsidies, which largely took the form of preferential access to foreign credit or domestic credit.¹⁰ The access to foreign credit facilities was especially important because there was a lack of domestic capital at that time in Korea. One of the most favoured state-led industries is shipbuilding. Taking the shipbuilding industry as an example, this study examines the importance of government support in industrial development and enhancement of the firm's competitiveness.

STATE SUPPORT IN EAST ASIAN SHIPBUILDING INDUSTRY

The importance of government role in the East Asian industrial development is clearly proven in the shipbuilding industry. Without government financial support, the shipbuilding industry would have collapsed more than once during difficult times if left alone in the world of "free competition."¹¹ The shipbuilding industry requires massive capital injections to support its long production periods and high fixed costs. Lengthy production periods create the problem of prolonged project financing, which will adversely affect the competitive position in the world market.¹² Secondly, the shipbuilding industry is cyclical in nature as the demand for shipbuilding depends very much on the world economy. With fluctuating world trade and economy, the demand for shipbuilding is unstable and at times unpredictable, and often causes an overcapacity during the economic downturn every few years. For instance, since 1896, the industry has encountered more than nine major cycles, each of which experienced more than 40 percent reduction in demand.

⁸ Michael Loriaux. Chapter Eight, "The French Developmental State as Myth and Moral Ambition," in *The Developmental State*, 2019, pp.24. Retrieved, 31 December 2019.

⁹ J. W. C. Tomlinson and Yoshihara Kunio, "Japanese Economic Development," *Pacific Affairs*, 1981, <https://doi.org/10.2307/2757909>. pp. 51. Retrieved October 2020.

¹⁰ M. Edward, "Reforming Korea's Industrial Conglomerates," Washington, DC: Institute for International Economics, 2003.

¹¹ *Ibid.*

¹² *Ibid.*

Smaller demand fluctuations of 10 to 20 percent happen every seven to ten years.¹³ When a major financial crisis happens, many weak players are wiped out from the market. Sudden cash crunches require massive capital injections to keep the company staying afloat. Without strong financial support, a shipbuilding company can easily shut down. At this point, the government bailout and supportive policy changes play a critical role in providing a lifeline to the firms, especially giant firms that are leading the industry. When the business downturn is over, the shipbuilders will recover from financial difficulties with increasing work orders. The government bailout is just a temporary measure to help firms ride out the financial storms.

In East Asia, the state role has always been the foundation of the local shipbuilding industry. For instance, the history of state-led development strategy in Japan dates back to the 19th century, during which the Meiji government development strategy was an important catalyst to develop Japan's shipbuilding industry. Japan's largest shipbuilder, Imabari, was founded under the initiative taken by the government. During the World War II, the Japan government forced six shipbuilders in the region to merge to create what would become Imabari Shipbuilding.¹⁴ With the initiatives taken by the government, local entrepreneurs were encouraged to venture into the capital intensive shipbuilding industry with various incentives. After the 1868 Meiji Restoration, hundreds of shipyards were built in Japan, with the aim of making Japan a super maritime power. The policies at that time were not formulated in response to market forces; they were crafted to counter the military challenge of the West. The construction of shipyards in that era laid a very solid foundation for the Japanese shipbuilders in the later period. The Meiji government's efforts to stimulate shipbuilding have very long lasting effects on Japan since the 19th century. For instance, Kawasaki Heavy Industries Ltd., one of the biggest Japanese shipbuilders today, was established in 1878 in Nagasaki, the only place in Japan opened to the West in the 1870s. With support provided by the Ministry of Finance, Kawasaki Tsukiji Shipyard was established on the land borrowed from the government in 1878.¹⁵ When the Sino-Japanese War broke out, Kawasaki and other Japanese shipbuilders started to enjoy extraordinary business growth. As a country which had zero knowledge in making ships, the Western technology was adopted to build shipyards and steamships. After the war with China, the Meiji government embarked on an enormous naval extension program; hundreds of war ships were made in Yokosuka, Kure and Sasebo. Under a strong support from the government and demands from the war, the Japanese shipbuilding industry successfully expanded in the 19th century. The number of steamships made in Japan grew from 26 in 1873, to 169 ships in 1894, and 797 ships in 1904. During that period, the world's leading shipbuilding nation was Britain, which produced on the average 75 percent of the world's output between 1892 and 1899.¹⁶ The leadership of the British shipbuilding industry in the world looked unchallengeable at that time. However, the world of business and industry is always full of uncertainties and volatility. Market competition and changes in the home country business environment are among the factors of disruption.

¹³ "An Assessment of Maritime Technology and Trade," Washington, D.C.: U.S. Congress, Office of Technology Assessment, OTA-O-220, October 1983, p.87.

¹⁴ "The quiet king of Japanese shipbuilding expands its empire," *Nikkei Asia Review*, 11 February, 2018, available from <https://asia.nikkei.com/Editor-s-Picks/Japan-Update/The-quiet-king-of-Japanese-shipbuilding-expands-its-empire>. Retrieved 20 December 2020.

¹⁵ Website of Kawasaki. <http://global.kawasaki.com/en/corp/history/index.html>. Retrieved November 2019.

¹⁶ Edward H. Lorenz, An Evolutionary Explanation for Competitive Decline: The British Shipbuilding Industry, 1890-1970. *The Journal of Economic History*, Vol. 51, No.4 (Dec 1991), pp. 911-935.

The fortune of the British shipbuilders began to decline with the rise of new competitors from the U.S and Germany in the early 1900s, and Japan in the 1950s. The British share of the world export market dropped drastically: from over 40 percent during 1927 to 1930 to 21 percent in 1936 to 1938.¹⁷ Although the world market demand for shipbuilding expanded at an extraordinary rate, the British shipbuilding industry continued to fall. By the end of the 1960s, Britain contributed only about 5 percent of the world output, ranking behind Japan, Sweden and West Germany.¹⁸ Leslie Jones and J. R. Parkinson argue that the British government's legislation for supporting the British operators was ineffective, while foreign competitors were effectively subsidized by their home governments.¹⁹ Under the strong support of the government, Japan gradually replaced the West as the most competitive shipbuilding nation in the world from the 1950s. This was the first challenger coming from the East, which the Western power had never thought of before. By importing foreign technology and equipment, Japan began to construct commercial ships for export. When the world orders for new ships increased, the Japanese companies slowly captured the world market share, and Japan overtook Great Britain as the world number one shipbuilding nation in 1956. The Japanese shipbuilders continued to grow exponentially, which produced almost half of all the new ship tonnage in the world during 1980s.²⁰ Japan's share of the global shipbuilding market (in terms of completions) in 1960 was 22 percent, and gradually increased to 53 percent by 1984.²¹ The achievement was truly remarkable as the shipbuilding industry is highly technology intensive, and was dominated by the big powers from the West in the past.

As the world trade grew and global demand for ships increased substantially, the shipbuilding industry in Japan grew continually. There were more than 5000 shipyards in Japan in the 1980s, which supplied 50 percent of ships in the world market. The Japanese shipbuilders were able to hold on to the leading position until 1999, despite going through very hard times in the mid-1970s and late 1980s. The state support with a series of restructuring programs, and the domestic market demand were key factors for keeping the Japanese shipyards competitive. Today, the Japanese shipbuilders are well known for constructing sophisticated offshore vessels and eco-friendly ships. Nonetheless, when the production cost in Japan increased substantially from the early 1990s due to the appreciation of the Japanese Yen, the local shipbuilders started losing their cost competitiveness to other Asian counterparts. The impact of Yen appreciation in the 1990s was very damaging to Japan's export oriented industries. When the Japanese industrialists lost their leading status to other competitors, it was hard for them to get it back as the market forces had shifted in other directions. This time the challenger came from Japan's neighboring country, South Korea, which was a newcomer in the shipbuilding industry, but was growing very fast. Following the same strategic plans implemented by Japan, South Korea slowly built up its shipbuilding industry since the 1970s with strong support from the state. The entry of Korean shipbuilders with cost competitiveness undermined the Japanese shipbuilding industry since the early 1990s, as Japanese ships were much more expensive. The major factor was the appreciation of Japanese Yen after Japan signed the Plaza Accord in 1985. The Yen appreciation was too large which climbed from 240 Yen to 1 USD in 1985 November to 100 Yen to 1 USD in 1994 June, which was more

¹⁷ Ibid.

¹⁸ Ibid.

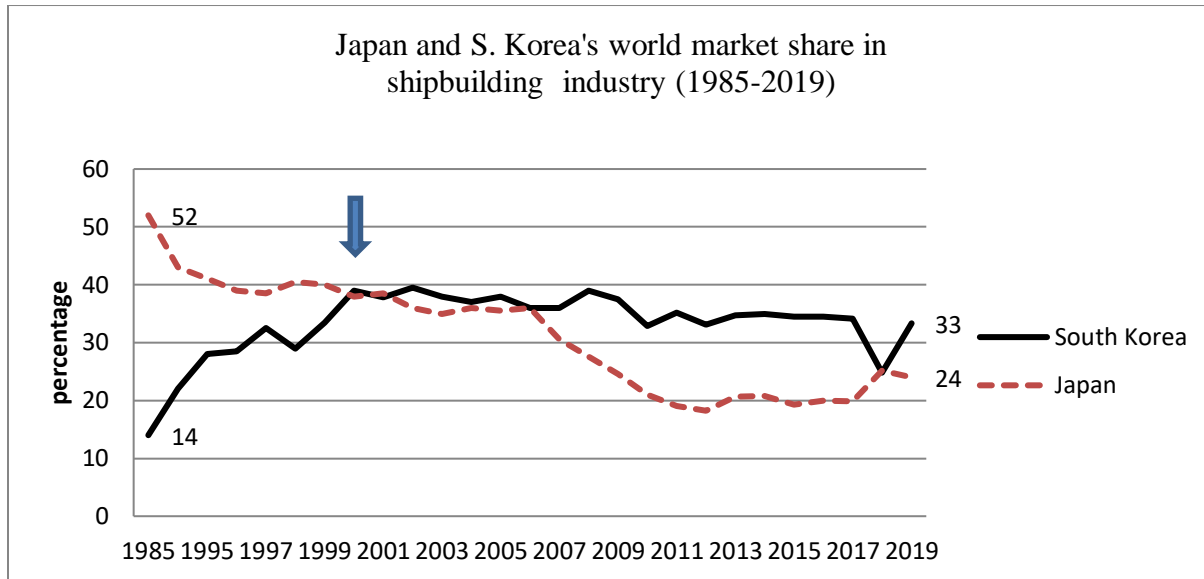
¹⁹ See Jones, *Shipbuilding in Britain*, pp. 149-55; and Parkinson, *The Economics of Shipbuilding*, pp. 93-94

²⁰ The Shipbuilder's Association of Japan.

²¹ "Japanese Shipbuilding," *Global Security*, 3 October, 2017, available from <https://www.globalsecurity.org/military/world/japan/industry-shipbuilding.htm>. Retrieved 12 December 2019.

than double. The sharp appreciation of Japanese Yen since 1985 had adversely affected the international business of the Japanese industrialists. The heyday of the Japanese shipbuilders was over and the Korean players had emerged as the global dominant shipbuilder, as shown in Graph 1.

Graph 1: Japan and South Korea’s world market share in shipbuilding industry (1985-2019)



Source: Shipbuilders Association of Japan

With the sudden rise of Japanese yen, Japan’s world market share of shipbuilding dropped from 52% in 1985 to 38% in 2000, while Korea’s market share rose sharply from 14% in 1985 to 39% in 2000. With cost competitiveness and technology capability, South Korea took over the leading position of Japan, and has become the world’s largest shipbuilding nation since the year 2000. Today, the world’s largest and leading shipbuilder is Korea’s Hyundai Shipbuilding, the pride of Korean people as it started from scratch and grew to the world’s number one within two decades. State support was one of the important ingredients in making the Korean shipbuilding a great success.

STATE SUPPORT AND THE RISE OF KOREAN SHIPBUILDERS

By importing European and Japanese shipbuilding technology, the Korean government embarked on an ambitious shipbuilding program. Shipbuilding was identified by the Korean government as a strategic industry that could generate huge spinoff effects on the upstream and downstream industries. It is the key industry that propels the growth of many heavy machinery manufacturing facilities, and it plays a crucial role in expanding both the commercial and military sectors, which are closely related to many other industries such as steel, electronics, logistics, port services, shipping, non-metal and machinery industries. As a core industry that has extensive linkages with more than 50 other industries, the Korean government has supported the shipbuilding industry for stimulating Korea’s economic growth, while Japan and China have promoted the shipbuilding industry for both military and commercial purposes. Through a state-led strategy, billions of dollars were invested in this sector, even though South Korea was still a poor country in the early

1970s. Under the powerful and capable leadership of Park Chung Hee, a solid foundation was laid and the Korean shipbuilding industry was successfully built up. With cooperation between the state and business leaders, Korea became the world's strongest shipbuilding nation within two decades. As a country deficient in capital, technology and skilled labor in the 1970s, the achievement of the Korean shipbuilding industry is remarkable and amazing. The Korean shipbuilders improved their global position continually, rising from less than one percent of completions in 1975 to nearly 22 percent in 1994, and 39 percent in 2008.²² Today, the Korean shipbuilders are still leading in the global shipbuilding industry in terms of global market shares and technology.

The full-scale growth of the Korean shipbuilding capacity began from the establishments of the shipyards of Hyundai Heavy Industries in 1973, Samsung Heavy Industries in 1977, and Daewoo Shipbuilding and Marine Engineering Co., Ltd in 1978. When the Park Chung Hee government embarked on the Heavy and Chemical Industrialization (HCI) drive in the early 1970s, Korea was still a backward nation with GDP per capita of USD 323. As a traditional agricultural economy, the industrialization of Korea started late. Technologies and heavy industries were totally new to Korea in the 1960s. Without any foundation and skills, the Park Chung Hee government took a bold decision by aiming big. In order to boost its production growth and exports, the Korean government shifted the focus of development plan from labor intensive industries in 1960s to capital intensive industries in 1970s. Six sectors were identified as the strategic industries, the most important of which were the steel and shipbuilding industries; both were seen as the backbone of heavy industry in Korea. The steel industry supports many other industries by providing raw materials as inputs, which include steel plates, rolled steel strips, I-beams and stainless steel products.²³ It is also a technologically integrated industry. In the development process, importing technology and knowledge from Japan was the important starting point for developing Korea's heavy industries. For instance, basic Japanese technologies were introduced for iron and steel making processes in the early 1970s. The Korean government also secured funding from Japan by normalizing its relations with Japan. By 1973, the Pohang Integrated Steelwork (POSCO) was completed. It was primarily funded by grants and soft loans provided by Japan, based on the two nations' 1965 treaty on basic relations. The government-affiliated Korea Development Bank was the major shareholder. Since that time, with the establishment of Dongguk Steel and Hyundai Steel companies, South Korea's steel production grows steadily and Korea has become one of the world's five largest steel producing countries.

With the commencement of HCI program in the 1970s, the major goal of Park Chung Hee's administration was to establish a self-reliant industrial economy, and boost Korea's GDP and export growth. Park Chung Hee decided that the central government must play the key role in industrial development for making drastic changes. Witnessing the industrial achievement of Japan under the state-led development model, Park Chung Hee was determined to move the nation in the same direction. He believed that it was a shortcut to bring Korea out of poverty and transform Korea into a prosperous nation. Korea's state-led development model is quite different from that of the communist regime: the communist government controls the ownership of property, determines market prices and production goals; in the case of Korea, the industrial players come from the private sectors and primarily, market forces rule the business activities. A win-win

²² The Shipbuilders' Association of Japan.

²³ Sangchul Won and Seung-Gap Choi, 2003. "Development of the Korean Iron and Steel Industry," IFAC New Technologies for Automation of Metallurgical Industry.p.1-8, available from <https://pdf.sciencedirectassets.com/314898>. Retrieved 23 December 2020.

strategy is implemented: the government pursues national development targets while business firms aim for business growth. Under the government-private sector cooperation model, the Korean entrepreneurs are the direct players in the industry and the government acted as supporter. The government guides the private industry through a series of export and production targets by controlling credit facilities, using informal means of pressure and persuasion, as well as introducing traditional monetary and fiscal policies. In the process, the role of Korean government is confined to the functions of supporting and stimulating the business environment, which help the direct players or the firm to secure capital, technologies, and market shares.

One of the most powerful tools is the policy loans, which benefits the Korean industrialist substantially. The Korean business companies are lured to participate in six targeted industries by various government incentives. Through nationalizing banks, the Korean government has direct control over all the institutional credit facilities. The flow of credit is under the control of the Ministry of Finance, the Economic Planning Board, and the Bank of Korea. Big project business loans and discounted policy loans can only be obtained with the approval from the government authority. Shipbuilding companies, which come under the strategic industries development plan, have access to HCI's policy loans with substantial discounts from the prevailing market rates. During that time, the difference between the interest rates of general loans and policy loans could be as high as 10 percent. For instance, in 1973, the nominal rate of policy loans for export purposes was 7 percent, while that of the general loan was 15.5 percent. In 1979, the market rate of general loans was 19% and that of the HCI's policy loan was only 9%.²⁴ The practice of giving discounted interest rate was continued until 1979 under the Park Chung Hee administration.²⁵ Due to the huge differences of interest rates between the general loan and discounted policy loan, the real interest rate of policy loan was negative throughout the 1970s. In reality, the Korean shipbuilders and other HCI's firms were heavily subsidized by the Korean government. However, there were terms of conditions attached to the policy loans. Recipients need to perform and achieve certain targets of exports and sales. The better the business performance, the more financial incentives would be given to the HCI's exporting firms.

The policies were collectively made by the Korean economist and technocrats, with minimal political interference under the powerful leadership of Park Chung Hee. The Economic Planning Board, created in 1961, was led by the deputy prime minister and staffed by bureaucrats known for their high intellectual capability, and good educational background in economics.²⁶ Under the previous administration of Syngman Rhee, there was much political intervention; the economic planning directions were mainly decided by politicians and not by professional economists. During Park Chung Hee's era, though Park was labeled as a dictator, he had full respect for and gave power to the economic experts in economic policy making. The status of economics and civilian experts rose significantly during Park's era. Despite the political pressure to favor some of the politicians, Park Chung Hee insisted that economic planning unit must be filled by economic experts and not by politicians who knew nothing about the economy. The manner of allocating resources to the private sectors during this period was different from that of the previous regime. Eligibility of applicants in big projects was thoroughly examined by bureaucrats, who were relatively free from political pressure and interest. As a result, companies selected for big projects were truly competitive and qualified. Through effective loan programs

²⁴ Sakong (1993) and Edward M., *Reforming Korea's Industrial Conglomerates*. Washington, DC: Institute for International Economics, 2003, p.40.

²⁵ Edward, 2003.

²⁶ Ibid.

and state-support programs, *chaebols* that succeeded in obtaining the government's support flourished in the 1970s. The number of member companies of the *chaebols* increased substantially as the business grew. Business groups like Samsung, Hyundai, Samho and Daewoo went on to expand aggressively, riding on close relationships with the government

To encourage players to venture into heavy industries, Park Chung Hee needed the Korean entrepreneurs' help. Instead of forming state-owned enterprises in the heavy industry (except POSCO), Park's administration chose to work together with the private sector. Park Chung Hee wanted to mobilize the private sector's managerial skills, and needed cooperation from the industrialists to achieve national development targets. The main functions of the state were confined to support, indication and intervention.²⁷ Despite skepticism and doubts from many sides about Park Chung Hee's HCI plan, the policy was continued. Korea's first steel company, POSCO was established in 1968 under Park Tae Joon, a joint venture between the Korean government and a private company, Taegu Tec. As a former military leader, POSCO's founder, Park Tae Joon led a team of 34 men to build the company on the sandy coastline of Pohang; it was considered a miracle at that time since Korea had no prior experience in making steel. Hyundai shipbuilding had a similar story: Chung Ju Yong, the founder of Hyundai Heavy Industry, was chosen by the government to establish a shipbuilding company. With zero knowledge and experience in shipbuilding, Chung Ju Yong founded the Hyundai Shipbuilding yard at Mipo, Ulsan in 1972. To ensure the success of Korean shipbuilding, the Korean government extended various financial and tax benefits to Hyundai, for example, by enacting the Law for Promoting the Shipbuilding Industry, designed specifically to back its risky business projects. In addition, the government guaranteed Hyundai's foreign borrowing from Barclay Bank.²⁸ Without the support from the government, it was almost impossible for Hyundai to obtain a large amount of loan as a new shipbuilding company. On the whole, industrial developments in the 1970s were mainly funded by foreign borrowing, as FDIs and local saving were very low at that time. Special privileges accorded to the Korean shipbuilders were particularly significant because the use of foreign loans in different sectors and industries was under the full control of the government.²⁹

By receiving active support from the Korean government, it could be argued that the firms' ongoing growth is expected to generate economies of scale and externalities, leading to lower production costs and enhanced competitiveness.³⁰ Through the enacting of the Shipbuilding Promotion Act (1967), Korean shipbuilders enjoyed various advantages such as ease of securing local and foreign loans, with the government as the guarantor, cheaper loans, tax exemptions, simplified procedures for registration, low-cost utilities, and manpower support. The Law was passed empowering the Korean government to protect lenders from default risks; the Korean government acted as the guarantor for supporting the loans. The measure was seen as necessary as most of the Korean *chaebols* had very high debt-to-equity ratios in the 1970s, over 400%. By assuming the risky roles of an investor as well as a loan guarantor, the government assists the firms to wipe out debts, and support their ongoing operations with sufficient liquidity. To achieve this, the Korean government directed more than half of the bank credit through state-owned banks. One of the prime examples is the state-run Korea Development Bank (KDB), which played a significant

²⁷ Yeon Ho Lee. 1997. "The State, Society and Big Business in South Korea," New York: Routledge, p.25.

²⁸ Youngjae Lim. 2002. "Hyundai Crisis: Its Development and Resolution," *Journal of East Asian Studies*, Vol.2 No.1, February 2002.

²⁹ Sakong, 1993, p.103

³⁰ Renaud, Bertrand. "Regional Policy and Industrial Location in South Korea." *Asian Survey*, Vol. 14, No. 5, 1974, pp. 456-477.

role as the major investor in the Korea shipbuilding companies. KDB has been the major shareholder of Hyundai Okpo Shipyard, Daewoo Shipyard and other big and medium shipbuilding companies since the 1970s. As of September 30 2018, KDB is the major shareholder of Hyundai Merchant Marine (HMM) and Daewoo Shipbuilding & Marine Engineering (DSME); KDB holds more than 55 percent of DSME's shares.³¹ As the major shareholder, KDB has great influence on the shipbuilding industry. The recent merging of Hyundai Heavy Industries (HHI) and Daewoo Shipbuilding & Marine Engineering (DSME) was one of the mega deals between KDB and HHI, even though Daewoo was reluctant to be taken over by HHI. As the financial health of Daewoo Shipbuilding & Marine Engineering (DSME) deteriorated after falling into a crisis in 2016, the state-run KDB believed that the merger of HHI and DSME may help to ease the financial pressure of Daewoo and improve the competitive position of Korea versus China's shipbuilding industry. Besides KDB, industry and policy banks were also established to support the heavy industry. The Korea Export-Import Bank was established to provide comprehensive export credit and guarantee programs to support Korean firms in the export business. The Korea Export-Import Bank is also one of the major fund providers for many Korean shipbuilders. Badly affected by the Covid-19 pandemic, Hyundai Heavy industries and other small shipbuilders were granted extra funds amounting to 1.4 trillion Won from the Korea Export Import Bank in May 2020. In other words, the Korean government becomes an implicit risk partner of the Korean shipbuilders through investment and funding.

Under the state led development strategies, the Korean shipbuilders have enjoyed a variety of economic privileges. In addition to low interest rates on bank loans, loan support and state funding, the Korean shipbuilders also received benefits in the forms of assistance in infrastructures, controlled labor wages, human resources supplies and protection from foreign competition. In the early stage of development in the 1970s-1980s, the government maintained a tough labor industrial policy by repressing the welfare of labor in order to achieve cost competitiveness of the Korean exporters. With national growth-first policies, the Korean government favored the low wage policy and long working hours throughout the 1960s-1980s.³² Labor rights of organizations, collective bargaining and collective action via referendum were restricted under the 1973 Yushin Constitution. With the pro-business and anti-labor policies, the Korean shipbuilders quickly built up their competitiveness and expanded market shares by offering cheaper products compared with those of the Japanese shipbuilders. The cost competitiveness of Korean industrialist was further enhanced with the reformation of exchange rate system. Korean won became cheaper with fluctuating rates since 1965. In addition to capital mobilization and production cost control, the development of the shipbuilding industry and other heavy industries required skilled human resources. To achieve this, the government reformed the education system at the middle and high school levels to graduate levels. Many technical high schools were set up to address the shortage of local technical engineers. The National Technical Qualifications Act was enacted to facilitate the development and training of manpower for the Korea industries.³³ Science and technology courses and programs were promoted in the local universities and colleges. For instance, Korea's first national research university, the Korea Advanced Institute of Science and Technology

³¹ "Heads of Hyundai Merchant Marine and Daewoo Shipbuilding & Marine Engineering Yield to Pressure from Korea Development Bank," *Business Korea*, Feb 25, 2019.

³²Yong Jin Park. "Modern Korean Economy," The Academy of Korean Studies, 2018, available from https://www.aks.ac.kr/ikorea/upload/intl/korean/UserFiles/UKS8_Modern_Korean_Economy_eng.pdf. Retrieved 11 November 2010.

³³ Ibid.

(KAIST) was established in 1971, which has produced many top engineers for the Korean industries. Strongly supported by the government, KAIST was established with a loan of US\$6 million from the United States Agency for International Development. A shipbuilding research institute was also established under the initiative taken by the government. The Korea Research Institute of Ships and Engineering (KRISO) was founded in 1973; the institution is affiliated with the Ship Research Institute of the Korea Institute of Science and Technology. KRISO has contributed in no small way to the development of the shipbuilding and maritime industry in Korea through R&D. In establishing research institutes, research universities and schools nationwide, the government's spending on education and R&D increased from 15% of GDP to more than 20% of GDP by the early 1980s.³⁴ In addition to R&D and education, industrial complexes were also built to house large-scale industrial infrastructures for the shipbuilders. In March 1974, Okpo and Geoje were selected as industrial areas for shipyards. By 1979, the total amount invested in the HCI sectors reached KRW 4.1 trillion. With an abundance of government special support, the Korean shipbuilders grew exponentially throughout the 1970s to 1980s, and finally took over the leading position of the Japanese shipbuilders in the late 1990s.

CONCLUSION

The state led development model has been proven successful in the case of development of Korean shipbuilding industry. As a backward economy with no capital and no skilled labor force in the 1960s, the Korean government was bold and audacious enough to make a decision to venture into the shipbuilding industry, which paid off handsomely. The remarkable achievement of the Korean shipbuilders was seen as a miracle, as the shipbuilding industry entails an array of comprehensive fabrications and assembling processes, which require superior workmanship and technological know-how. With a full scale support from the state, the Korean shipbuilders managed to address these problems: raise sufficient capital, lower production cost, construct adequate infrastructures, and resolve manpower issues. When Korea first endeavored to enter the shipbuilding industry, the world's shipbuilding market was dominated by the superpowers such as Japan and Germany. Winning shipbuilding contracts was a daunting task for a newcomer in the industry, as reputation is a crucial factor. To gain confidence from the buyers, the Korean shipbuilders needed to improve their competitive advantage in ship delivery time, the quality of design, the standard of workmanship, and the prices of ships offered. Among the factors, prices of ship and delivery time are the most crucial factors for winning the bids.

With the extra help from the government in the forms of capital injections and lower costs, the Korean shipbuilders managed to beat their competitors with cost competitiveness. Through large investments in R&D and human capital training by the government, a well-educated and highly motivated workforce was available, which has helped to produce low-cost and high-quality goods. Without the effective and efficient support from the state in the initial stage, the Korean shipbuilders would not have attained such a remarkable achievement within a short period of time. After one decade of development, South Korea emerged as the most formidable competitor to Japan, and eventually wrested the world leading position in the year 2000. As a cyclical industry, the shipbuilding business is very sensitive to changes in the international trade and economic trends; hence, state support is an essential measure for all the shipbuilding companies in the world. A sudden market crash or major financial crisis may easily cripple a shipbuilding company. Thus, without any doubt, effective intervention of the government in the shipbuilding industry is

³⁴ Ibid.

certainly necessary. The state-led development strategy has significantly contributed to the rapid growth of the Korean heavy industries and increase in firm competitiveness, which has been proven in the shipbuilding industry.

REFERENCES

Drucker, Peter F., "Behind Japan's Success," *Harvard Business Review*, Jan 1981.
<https://hbr.org/1981/01/behind-japans-success>. Retrieved Nov 2019.

Edward M., "Reforming Korea's Industrial Conglomerates," Washington, DC: Institute for International Economics, 2003.

"Heads of Hyundai Merchant Marine and Daewoo Shipbuilding & Marine Engineering Yield to Pressure from Korea Development Bank," *Business Korea*, Feb 25, 2019, available from <http://www.businesskorea.co.kr/news/articleView.html?idxno=29425>. Retrieved Sept 2019

"Japanese Shipbuilding," *Global Security*, October 3, 2017, available from <https://www.globalsecurity.org/military/world/japan/industry-shipbuilding.htm>. Retrieved Dec 2019.

Jones, Leslie, "Shipbuilding in Britain: Mainly Between the Two World Wars," Cardiff, 1957.

Joo Hye-Young, Yong Won Seo and Hokey Min, "Examining the effects of government intervention on the firm's environmental and technological innovation capabilities and export performance," *International Journal of Production Research*, Vol. 56, No. 3, pp1-22, February 2018.

Lee Yeon Ho., "The State, Society and Big Business in South Korea," New York: Routledge, 1997.

Lim Youngjae, "Hyundai Crisis: Its Development and Resolution," *Journal of East Asian Studies*, Vol.2 No.1, February 2002, pp. 261-283.

Lorenz, Edward H., "An Evolutionary Explanation for Competitive Decline: The British Shipbuilding Industry, 1890-1970," *The Journal of Economic History*, Vol. 51, No. 4 Dec 1991, pp. 911-935.

Noland, Marcus, and Howard Pack, *Industrial Policy in an Era of Globalization: Lessons from Asia*. Washington, D.C.: Institute for International Economics, 2003.

Park Yong Jin, "Modern Korean Economy," The Academy of Korean Studies, 2018, available from https://www.aks.ac.kr/ikorea/upload/intl/korean/UserFiles/UKS8_Modern_Korean_Economy_eng.pdf. Retrieved Jan 2020.

Parkinson, John R., "Trends in the Output and Export of Merchant Ships," *Scottish Journal of Political Economy*, Vol. 3, No.10, 1956.

Porter, Michael, "The Competitive Advantage of Nation," *Harvard Business Review*, March – April 1990, available from <https://hbr.org/1990/03/the-competitive-advantage-of-nations>.
Ministry of Foreign Affairs, 1963.

Renaud, Bertrand, "Regional Policy and Industrial Location in South Korea." *Asian Survey*, Vol. 14, no. 5, 1974, pp. 456-477. Retrieved December 1, 2019.

Sakisaka, Masao, *Development of the Japanese Economy After World War II*, Gaimushō: Michael Loriaux. Chapter Eight, "The French Developmental State as Myth and Moral Ambition." In *The Developmental State*, 2019, <https://doi.org/10.7591/9781501720383-010>. pp. 24.

Sakong Il, "Korea in the World Economy," Washington, DC: Institute for International Economics, January 1993.

"The quiet king of Japanese shipbuilding expands its empire," *Nikkei Asia Review*, Feb 11, 2018, available from <https://asia.nikkei.com/Editor-s-Picks/Japan-Update/The-quiet-king-of-Japanese-shipbuilding-expands-its-empire>. Retrieved Sept 2019

Tomlinson, J. W. C., and Yoshihara Kunio. "Japanese Economic Development," *Pacific Affairs*, 1981, <https://doi.org/10.2307/2757909>. pp. 51. Retrieved October 2019.

Won,Sangchul and Seung-Gap Choi, 2003., "Development of the Korean Iron and Steel Industry ," IFAC New Technologies for Automation of Metallurgical Industry.p.1-8, available from <https://pdf.sciencedirectassets.com/314898>. Retrieved Nov 2019